Draft Final
Management Action Process
(MAP)
Document

April 1996

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1. Introduction

A critical mission of the Department of Energy (DOE) is the planning, implementation, and completion of environmental restoration (ER) programs at operating and inactive DOE facilities. An integral part of this mission is the safe and cost-effective environmental restoration of the Rocky Flats Environmental Technology Site (Rocky Flats, or the Site) located 16 miles northwest of downtown Denver, Colorado, Figure 1.1. This installation, formerly the Rocky Flats Plant (RFP), operated for 38 years producing nuclear weapons components in support of the U. S. defense programs. Production was suspended at the end of 1989 and was formally terminated in 1994, when the installation mission officially became environmental restoration.

The mission of DOE's ER Program is to protect human health and the environment from risks posed by inactive and surplus facilities and contaminated areas by remediating sites and facilities in the most cost-efficient and responsible manner possible in order to provide for future beneficial use. This mission will be accomplished by adhering to the ER Program core values:

- Ensure protection of workers, the public health and safety, and the environment;
- Serve as a model steward of natural and cultural resources;
- Comply with federal, state, and local statutes;
- Use taxpayers' money prudently in achieving tangible results;
- Focus on customer satisfaction and collaborative decision making; and
- Demonstrate a commitment to excellence.

RFETS has taken the approach that although ER is critical to the new mission of the Site, the safe management and long-term storage and/or final disposition of special nuclear materials (SNM) at Rocky Flats is of equal or even greater immediate importance. To this end, Rocky Flats has prepared a document entitled the Accelerated Site Action Project (ASAP) which provides the information requested by EM-40 for ER at the Site and also addresses the SNM concerns. This Management Action Process (MAP) Document utilizes the information available in the ASAP document, summarizes the accomplishments and the current status of the RFETS ER program and presents a comprehensive strategy for remediation and management of contaminated environmental media and the decommissioning of facilities and structures. In addition, this Document presents a comprehensive strategy for radically reducing the risks associated with the presence of nuclear and non-nuclear material at RFETS.

1.1. Purpose of Management Action Process (MAP)

The Management Action Process (Process) is designed to assist DOE, contractor management and technical personnel, regulators, and stakeholders in capturing, evaluating, and documenting information essential for programming, decision making, and implementing ER programs. At Rocky Flats, this process was developed under the auspices of the ASAP and thus covers not just ER but stabilization and deactivation actions; it is a uniique applications of the MAP techniques. The Rocky Flats ASAP is a planning and integration project with the goal of radically reducing the risks associated with the presence of nuclear and nonnuclear materials at Rocky Flats. This risk reduction will be accomplished at an accelerated pace and at a

Figure1.1 Rocky Flats Location in the Denver Metropolitan Area
(This figure was not submitted)

significantly reduced cost compared with the Site's previously planned course of action. The ASAP provides a means for developing a common understanding of project status and strategy, understanding and evaluating ever-changing project requirements, identifying project improvement or optimization opportunities, setting priorities and sequencing work activities, and identifying and resolving local and strategic issues. The ASAP, which includes a bottom-up review of all past and ongoing SMN stabilization and cleanup program and other Site activities at Rocky Flats, provides a dynamic approach to developing effective SMN stabilization and cleanup strategies and resolving all technical, operational, and administrative issues so that actions can be effectively and expeditiously completed.

Because the ASAP addresses all Site activities, it also includes project support activities in its evaluation. These activities include public involvement programs, DOE program management, any support programs needed for identified site actions, site-wide services, such as infrastructure, maintenance, etc., and any technology development necessary for site actions implementation. DOE Orders and Defense Nuclear Facility Safety Board (DNFSB) findings have also been considered by ASAP when evaluating prioritized site actions.

The Document is a result of the Process and incorporates recommendations developing therein. It represents a concise "snapshot" of the Rocky Flats Sitewide programs and includes a summary of past accomplishments, current status of the Sitewide programs, and the future strategy, rationale, schedule, and funding requirements necessary to meet funding objectives. The uniqueness of this document is that it is a single, consolidated document that not only identifies Rocky Flats strategic course of action for restoration of the Rocky Flats installation, but also addresses strategies for **all** activities at the Site. Like the Process itself, this Document is dynamic and will be updated regularly.

The Document satisfies information requirements for the Project Execution Plan, the Site-Specific Plan, the Site Comprehensive Plan, the Project Plan, the Site Development Plan, and the Project Management Plan, thereby eliminating the need for their development.

[insert text about projectization; include issues which may impede process - John Schneider]

1.2. Organization of MAP Document

Section 1 - Describes the mission, vision, and objectives of the ASAP; describes the purpose of the MAP and the organization of the Document. Identifies key participants in the Process, including DOE and contractor management and technical personnel, regulators, and stakeholders; describes the interrelationships of the ER program with regulators, stakeholders, and the public. Includs a summary of MAP accomplishments and a strategy for continuing the Process (steps used in implementing the Process together with a discussion of steps that follow), including planned process adjustments to improve the Process.

Section 2 - Provides a description of the Site's natural and physical characteristics, including its environmental setting and facilities, infrastructure, and equipment. Summarizes local community and regional social, economic, cultural, and ecological factors influencing the Site. Describes operational history; current Site and adjacent

land uses; off-site contamination; and planned, proposed, or projected future uses of the land, facilities, and equipment.

Section 3 - Summarizes the current status of EM program activities for contaminated sites and buildings, including identification of contaminant release sites, associated relative risk, status of assessment, and remediation efforts. Describes the environmental condition of the property. Defines appropriate regulatory programs under which contaminated sites are being addressed. Summarizes the history and status of other related elements of the Rocky Flats Sitewide programs including public participation, program management, and support programs.

Section 4 - Presents a qualitative summary of relative risk to the public, site workers, and the ecosystem for each contaminated site and building.

Section 5 - Describes the Rocky Flats ASAP strategy, including key assumptions and strategies for stabilization, deactivation, characterization, remedy selection, and regulatory compliance. Presents strategies and plans for defining, sequencing, and streamlining actions at operable units (OUs) and individual contaminated sites. Summarizes strategies related to other elements including program management (funding), public participation, environmental justice, waste management, surveillance and monitoring, and technology development. Presents critical performance criteria for measuring the success of the ER program.

Section 6 - Presents a master schedule of planned and anticipated activities to be performed throughout the duration of the Rocky Flats ASAP; identifies regulatory compliance schedules and specific milestones.

Section 7 - Identifies specific technical and administrative issues directly and indirectly affecting the Rocky Flats ASAP to be addressed and resolved by the Rocky Flats ASAP Team or higher authority if necessary. Also identifies special initiatives that will inhance the ASAP efficiency.

Appendix A - Provides past cost and projected budgeted cost information for all Rocky Flats ASAP projects.

Appendix B - Presents tabulated summaries of ER documents.

Appendix C - Summarizes decision documents and Records of Decision (RODs) for remedial actions or no further action. Also provides related decision documents from the DNFSB and other compliance orders.

Appendix D - Presents conceptual models depicting contaminant sources, transport mechanisms, exposure pathways and routes, and receptors for contaminated sites exhibiting high relative risk.

Appendix E - Summarizes project controls for the Rocky Flats ASAP, including responsibility assignment matrices (RAMs), change control thresholds, and reporting requirements.

1.3. Environmental Restoration Objectives

ENVIRONMENTAL PROGRAMS (EP)
STRATEGIC GOALS FOR OCTOBER 1, 2000

The Environmental Programs (EP) Strategic Goals 2000 have been developed to communicate the mission of EP and concentrate our program activities on significantly reducing risks associated with environmental liabilities. These goals are consistent with the HQ Environmental Management and Rocky Flats Field Office Strategic Plans and provide clarity to the desired end state for the Site.

- Buffer zone restoration complete
- Groundwater remedial action in place
- Sitewide wastewater treatment system is operational at a maximum annual cost of $5M
- Total volume of LLW, LLMW, TRU and TRU mixed waste stored on site does not exceed 7,500 cubic yards
- New treatment system(s) on-line for solid mixed waste
- Hazardous, radiological, and mixed waste storage is consolidated into two storage locations
- Costs are reduced to:
  - 80% of industry standard cost estimates for remediation work
  - Best industry standards for similar waste forms

RFFO STRATEGIC OBJECTIVES

The following strategic objectives were developed by distilling the mission into more pragmatic and concrete guidelines upon which strategies and associated action plans will be developed. The strategic objectives are numbered solely for identification purposes.

Strategic Objective 1	Manage waste effectively such that the forecasted waste inventory is reduced by 50% by the end of FY 2005.
Strategic Objective 2	Place nuclear materials in environmentally sound, physically safe secure, proliferation resistant, and verifiable storage by FY 2002, until an off-site receiver is available.
Strategic Objective 3	By the end of FY 1997, improve management of equipment and other usable materials, and by the end of FY 2000, create and implement processes to reduce risks and costs for usable equipment and materials.
Strategic Objective 4	By the end of FY 2000, complete ER 2000 cleanup actions, and by the year 2020, complete CERCLA/RCRA cleanup required by the Rocky Flats Cleanup Agreement.
Strategic Objective 5	By December 1996, in full partnership with stakeholders, identify preferred short term and long term beneficial uses of Rocky Flats.

Strategic Objective 6	By the end of FY 1999, reduce by 50% hazards to the worker and public from Rocky Flats .
Strategic Objective 7	By the end of FY 1996, achieve full environmental regulatory compliance with the legal requirements outlined in compliance agreements; court orders; consent agreements; and Federal and state regulations.
Strategic Objective 8	By the end of FY 1996, the interests, values, views, priorities and concerns of the public are appropriately integrated into the operations at Rocky Flats.
Strategic Objective 9	Develop and motivate our people, both as individuals and as a team.
Strategic Objective 10	By the end of FY 1999, reduce by 25% the security resource requirements and security impacts to other programs without an unacceptable increase in risk.
Strategic Objective 11	Implement a culture that ensures we plan, prioritize and streamline activities so that 50% of FY 1998 operating funds are available for liability reduction activities (e.g., Operating Unit [OU] remediation; waste treatment, storage and disposal; material stabilization; Special Nuclear Material [SNM] consolidation).

1.4. Project Team

A Project Team has been established to implement the Process for Rocky Flats. The Project Team includes key personnel from DOE's Rocky Flats Field Office, Kaiser-Hill, the integrating contractor with overall responsibility for remediation and the conduct of site activities, and Kaiser-Hill's subcontractors. The Process considers active and constructive participation by regulators and stakeholders to be integral to the success of the process. Therefore, the U.S. Environmental Protection Agency (EPA) and the Colorado Department of Public Health and Environment (CDPHE) represent the regulatory agencies with oversight responsibilities for Rocky Flats ER on the Project Team. Stakeholders are represented on the Project Team by the Citizens Advisory Board (CAB). Table 1.4-1 lists the Project Team's core members and key participants.

Table 1.4-1 Project Team

Core Project Team Members				
Name	Title	Organization	Role / Responsibility	Phone
Claire Gesalman		DOE HQ		
Frazer Lockhart	Division Director	Strategy, Integration, & Guidance (SIG), DOE	ASAP Project Manager, DOE	966-7846
Gene Senat		SIG, DOE	MAP Document Project Manager, DOE	966-3505
Alan Schubert	Division Director for ASAP/Strategic Planning	Planning & Integration (P&I), Kaiser-Hill	Project Manager, Kaiser-Hill	966-5251
Larry Murphy	Deputy Director	P&I, Kaiser-Hill	Lead-Cost/ Schedule/Integration	966-3274
Steve Hansen	Associate Fellow Engineer	P&I, Tenera	Project mgmt support, video/ graphics, WBS	966-4565
Mike Hill	Scheduling Manager	P&I, Tenera	Scheduling Manager	966-6138
Ed Lee	Senior Advisor	P&I, Kaiser-Hill	Project Mgmt	966-7377
Mike Peters		P&I, Kaiser-Hill	Project Lead-ER	
Terry Healy	Program Manager	SMM&I, Kaiser-Hill	Project Lead-Decommissioning	966-2975
Joel Kohler		P&I, MSI	Lead-Scenarios	966-6149
Gary Potter		Kaiser-Hill	Lead-Waste	966-4283
Dave Ruscitto		Kaiser-Hill	Lead-Implementation	966-6032
Wes Brinsfield			Lead-Risk	966-2281
Dan Shain		Kaiser-Hill	Lead-Scenario Comparative Analysis	966-7703
Bob Ogg		Kaiser-Hill	Lead-Pu	966-3091
Ken Korkia		CAB		
Bob Wurther		DNFSB		
Rob Henneke		EPA		
Lou Johnson		EPA		
Jackie Beradini		CDPHE		
Steve Tarleton		CDPHE		

Table 1.4-2

Technical Project Team Members		
Subject Area	Name	Organization
Scheduling	Mike Hill	P&I, Tenera
Scenario Dev. & Analysis	Jill McLaughlin, Pam Lee	P&I, Kaiser-Hill
Facility Use	Larry Smith	P&I, Kaiser-Hill
Risk Analysis	Scott McGlochlin	P&I, Kaiser-Hill
Modeling for cost analysis, waste vol., risk, staff levels	Dan Shain	P&I, Kaiser-Hill
Modeling for cost analysis, waste vol., risk, staff levels	Pete Bain, John Bauer	P&I, Tenera
Cleanup levels/regulatory/risk	Chris Dayton, Laura Brooks, Mary Lee Hogg	P&I, Compliance, P&I, Kaiser-Hill
Cost Estimating	Mike Jennings Norm Sproles	P&I, Kaiser-Hill P&I
Final Cover Design	Joyce Schroder	Los Alamos National Labs
Surface water, ground water, landfills	John Hopkins, John Law, Tim O'Rourke	RMRS
Modeling	Barry Roberts	RMRS
Waste Vol.	Bob Cygnarowz	RMRS
NFA Criteria	Dennis Schubee	RMRS
Prioritization	Annette Primrose	RMRS
D&D	Paul Bengal, John Chapin, Ted Kearns, Kent Dorr, Bob Schmidt	RMRS, BNFL, K-H, SSOC
Facility Planning	Larry Smith	Kaiser-Hill

1.5. Organizational Interfaces

The accomplishment of the Rocky Flats mission and objectives requires guidance, oversight, and support of various DOE and external organizations. These organizations are shown in Figure 1.5-1 and their functions are described in Table 1.5-1.

Figure 1.5-1 Organizational Interfaces

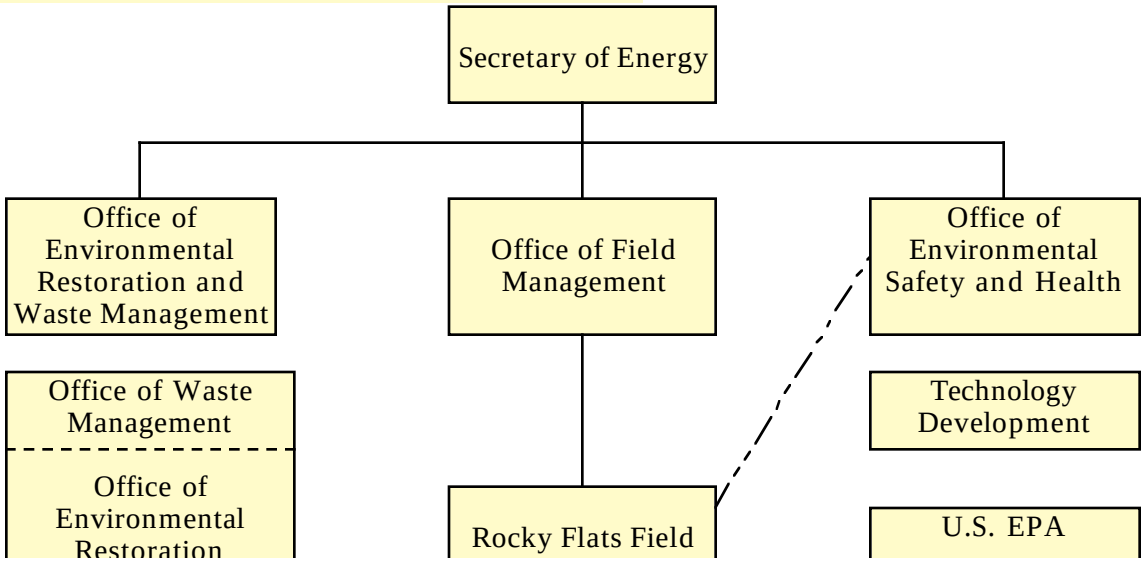

Table 1.5-1 Organizational Functions

Name of Organization	Role / Responsibility
Office of Environmental Restoration(EM-40)	Oversees Site Environmental Restoration Activities
Office of Waste Management(EM-30)	Oversees management of wastes generated during site operations and remediation activities.
Office of Nuclear Material & Facility Stabilization (EM-60)	Oversees deactivation of buildings and stabilization of SNM.
Office of Site Operations (EM-70)	Oversees Site maintenance activities until transferred to EM-40.
Defense Nuclear Facilities Safety Board (DNFSB)	Reviews all Rocky Flats operations from a safety perspective and provides findings and recommendations which the Site implements, as required.
Rocky Flats Field Office	Responsibility for accomplishing the Rocky Flats mission. Oversees and manages the Kaiser-Hill contract. Responsible for administration and finance.
Kaiser-Hill	Is the integrating contractor for all activities at the Site. Oversees Site remediation and management & operation of the Site.
Rocky Mountain Remediation Services (RMRS)	Conducts Site restoration including remediation, D&D, and waste management.
Safe Sites of Colorado (SSOC)	Responsible for SNM stabilization and management at Rocky Flats.
Dyncorp of Colorado, Inc.	Provides facility management and site services at Rocky Flats.
Wackenhut (WSI)	Provides security control at Rocky Flats.
U.S. EPA	Regulatory oversight of remedial actions at Rocky Flats subject to the RFCA; oversight responsibility for compliance with Toxic Substances Control Act (TSCA), Safe Drinking Water Act, and Clean Air Act.
CDPHE	Oversight responsibility for compliance with the Resource Conservation and Recovery Act (RCRA), and Clean Water Act; regulatory oversight of remedial actions at Rocky Flats subject to the RFCA.
DOE Technology Development Program	Ensures use of the fastest, safest, and most cost-effective technologies, particularly facility dismantlement.
Citizens Advisory Board	Active in monitoring activities at Rocky Flats and continues to play a significant role in management of Rocky Flats by providing community perspective and input on important regulatory decisions and management actions at the Site.

1.6. Status of MAP

ASAP was developed in three phases. On September 30, 1995, a Phase I report was published which demonstrated that the Site could achieve rapid risk reduction within eight years at a cost of $6 billion. The Phase I report contained several policy assumptions, including unconstrained annual funding and significant regulatory flexibility. Phase II, which is in a final draft form, expanded the scope of Phase I horizontally to assess the various alternatives in order to identify the most promising Site alternative for in-depth exploration in Phase III.

The decision to develop information about various routes to accelerated safe closure at Rocky Flats was driven by stakeholder and regulator input, and the desire to assist decision-makers in their deliberations over the future Vision for Rocky Flats.

Four major alternatives, along with several derivative variations, were developed. The ASAP Phase II family of alternatives was based on two key objectives: (1) provide upper and lower bounds for the available alternatives representing the current Draft Conceptual Vision of November 8, 1995; and (2) address the issues raised by stakeholders and regulators. Each alternative encompasses a set of integrated choices relating to the five specialty task areas: (1) SNM Stabilization and Consolidation and Storage; (2) Waste Management; (3) Facility Decommissioning; (4) Environmental Restoration; and (5) Infrastructure.

A comparative analysis of the alternatives was performed in Phase II. A more detailed analysis will be completed during ASAP Phase III, during which time stakeholders, regulators, and decision makers will work to select the alternative most compatible with the final vision for the Site. The description of the ASAP alternatives is provided below:

Alternative 1 - Unrestricted Access
This alternative describes the clean-up of the entire site to residential standards.

Alternative 2 - BEMR I
This alternative represents early site planning that was published in the 1995 Baseline Environmental Management Report (BEMR), a Congressionally mandated report, dated March 1995.

Alternative 3a - Restricted Access: Retrievable Storage - Delayed Shipment
This alternative describes eventual off-site shipment of radioactive waste placed in interim storage facilities.

Alternative 3b - Restricted Access: Accelerated Shipment
This alternative evaluates accelerated shipment of radioactive waste off-site for disposal. Shipment is preferentially funded over Pu and ER risk reduction. This is similar to alternative 3a.

Alternative 3c - Restricted Access: Potentially Retrievable Storage
This alternative places all radioactive waste in monitored, retrievable storage / disposal facilities preserving the option for later removal.

Alternative 3d - Restricted Access: Partial Retrievable Storage

This alternative evaluates the placement of all low level and low level mixed wastes that must be transported or moved (i.e., container and bulk) into on-site monitored, retrievable storage / disposal facilities.

Alternative 3e - Restricted Access: On-Site Disposal
This alternative evaluates the disposal of most low level and low level mixed waste on-site in RCRA Subtitle C type landfill(s) and some low level wastes in building basements. Future retrieval of waste is more difficult than Alternatives 3c or 3d.

Alternative 4 - Containment
This alternative evaluates the clean-up of the Site to necessary and sufficient safety levels. Facilities remain standing but vacant unless it makes economic sense to demolish them. Most low level and low level mixed wastes are disposed in monitored, retrievable storage / disposal facilities.

Each alternative identified during Phase II contains assumptions and activities common to most, if not all, of the other alternatives. If maximum technical and schedule improvement, and cost-efficiency are to be realized by ASAP, then further analysis of these common assumptions and activities during Phase III is necessary. Special studies, cost-benefit analysis, and risk analysis will be performed to maximize risk reduction and reduce uncertainties while improving productivity and efficiency. Also, as stakeholder and regulator groups from the general public, state, and federal sectors work toward selection of an alternative to recommend, special study topics may be identified.

Recommendation of the preferred alternative will occur during Phase III. Following this decision, the results of earlier special studies, risk analysis, cost-benefit analysis, and systems engineering studies will be integrated during the development of a single ASAP description and proposed baseline.

By July 1996, the baseline description will be sufficiently detailed to provide the basis for preparation of the FY97 site budget request with outyear descriptions fully developed at the summary level. Complete network logic diagrams, work breakdown structure, schedules, and cost estimates will be assembled for outyear planning.

1.7. Strategy for MAP

By the end of Phase III, the major plans and work activities at the Site will have been aligned for implementation with the recommended alternative. Phase IV implementation of ASAP will focus on aligning the recommended alternative with three major Site planning efforts: (1) the Conceptual Vision for the Site developed during the Workout II session in March 1996; (2) the Integrated Sitewide Baseline (ISB); and (3) SNM stabilization and consolidation plans encompassed by the Site Integrated Stabilization Management Plan (SISMP), and DNFSB Recommendations 94-1 and 94-3. ASAP's anticipated alignment with each of these three program areas is discussed below.

ASAP, the Conceptual Vision, and the National Environmental Policy Act (NEPA) – The Rocky Flats Draft Conceptual Vision and the ASAP are closely related. The draft Conceptual Vision, currently under development, will help guide all actions at the Site including cleanup, SNM consolidation, safety, physical plant conversion and land use. The Vision forms the planning target for Site closure. ASAP will define the implementation strategy to reach the Vision. The data generated during the ASAP

process will aid decision makers in the finalization of the Vision and development of the cleanup agreements.

Rocky Flats NEPA activities will bound the alternative recommended for the Site. The Site-Wide Environmental Impact Statement (SWEIS), publication of which is expected in 1997, will incorporate major elements of the various ASAP alternatives. The Conceptual Vision focuses the direction that the Site will pursue and is consistent with the SWEIS analyses for end state scenarios. The record of decision (ROD) will define the preferred action(s). Actions that need to take place prior to the ROD can be treated as interim actions to the SWEIS if they meet the criteria of 40 CFR 1506.1c which requires that the actions are justified independently of the program, are accompanied by an adequate NEPA document, and will not prejudice the ultimate decision on the program.

ASAP, the SNM Storage Stabilization and Consolidation Programs 94-1, 94-3, and SISMP – The expectation is that ASAP will not introduce new activities in the stabilization, consolidation, and storage of SNM. ASAP plans for SNM stabilization and consolidation to conform to existing commitments described in the SISMP, and DNFSB Recommendations 94-1 and 94-3. SNM strategy in ASAP is expected to align with the existing SNM programs, and the Site intends to honor DNFSB and DOE commitments.

ASAP and the Integrated Sitewide Baseline (ISB) – Alignment of the ISB, once the recommended alternative is approved for planning purposes, is expected. During the first half of FY96, work is being aligned to a set of DOE-approved performance measures and corresponding work packages that do not preclude the implementation of any of the alternatives.

ASAP will become the basis for sitewide integrated planning and program execution. The emphasis through Phase III will be on detailed studies and selection of a recommended alternative. From September 1996 through December 1996, ASAP Phase IV will concentrate on refinement of planning for FY98 and beyond.

2. Site Description and Comprehensive Planning

2.1. Operational History

Rocky Flats is part of the Nuclear Weapons Complex of DOE. The DOE complex consists of 13 interrelated major facilities that have (or have had) as their main mission the design, manufacturing, testing, production, and maintenance of nuclear weapons for the U.S. arsenal.

By the end of the Cold War, numerous DOE facilities were radioactively contaminated. Many of the sites contain large and intricate production facilities contaminated with hazardous chemical and radiological substances. Contamination of soil, surface water, and groundwater is extensive. DOE has estimated that it will cost nearly a total of $300 billion to clean up the entire DOE weapons complex, and this cleanup will be the single largest environmental program in history.

Rocky Flats, one of the 13 major DOE weapons facilities, occupies approximately 6,200 acres in northern Jefferson County, Colorado, about 16 miles northwest of Denver. From its first construction in the early 1950's, the original site has developed into an industrial complex consisting of more than 500 facilities that were used for manufacturing, chemical processing, laboratory, support, research and development, and administrative activities. The main production and support facilities were located near the center of the Site, commonly referred to as the Industrial Area, and occupy about 385 acres, Figure 2.1-1. In 1972, a surrounding 3,930-acre parcel was acquired to function as a security and safety Buffer Zone to minimize problems arising from the growing proximity of residential communities.

Land adjacent to the Buffer Zone is owned by several cities, counties, and private owners (See Figure 2.1-2) and is used primarily for agricultural and residential purposes, Figure 2.1-3. In the 40 years since Rocky Flats was constructed, surrounding multi-use development has steadily approached the Site. The population of the Denver metropolitan area has increased to nearly 2.2 million people within a 50-mile radius of the Site.

From 1952 to 1989, the primary mission of the Site (then called the Rocky Flats Plant) was the production of nuclear and nonnuclear components for nuclear weapons. During this period, activities generally consisted of radioactive (e.g., plutonium and uranium) and nonradioactive (e.g., stainless steel and beryllium) metal working, fabrication and component assembly, and plutonium recovery and purification. Research and development in the fields of chemistry, physics, metallurgy, materials technology, nuclear safety, and mechanical engineering were conducted to advance the Site's mission.

In 1989, almost all of the radioactive-material production activities at Rocky Flats were suspended due to safety and environmental concerns related to operations, and the Site was placed on the Superfund National Priorities List. In 1992, the nuclear weapons component role of Rocky Flats ended with the cancellation of production of the W-88 Trident Warhead. Although production has ceased, nuclear weapons components, other nuclear materials, and wastes are still stored in many buildings. Extensive effort and human resources are required to maintain these buildings, and their contents, in a safe and secure condition.

In the process of fulfilling the earlier national security mission, the use of the above mentioned materials and processes contaminated facilities, soil, groundwater and surface water at Rocky Flats with chemical and radioactive substances. Additional Site liabilities include significant quantities of nuclear material; radioactive and hazardous waste; contaminated facilities, land, and water; and surplus equipment and materials. As a consequence, the Site has numerous potential health and safety risks, high baseline operating costs, significant legal requirements, and other infrastructure burdens.

Figure 2.1-4 shows that the vast majority of the Site plutonium (over 95 percent) is found in metal, compounds, and residues. About 5 percent of Site plutonium is found in contaminated facilities, containerized wastes and soils. Figure 2.1-5 shows that of the total volume of materials containing plutonium, about 95 percent is contaminated soils (over 2,000,000 cubic meters).

In 1991, the DOE entered into a tri-party Rocky Flats cleanup agreement (referred to as the Interagency Agreement or IAG) with the State of Colorado and the EPA. The IAG specified a legally enforceable framework for assessing the nature and extent of contamination, determining the associated risks, and accomplishing remediation. Under the IAG, 173 Individual Hazardous Substances Sites (IHSSs) were identified at the Site and grouped into 16 Operable Units (OUs).

With the cancellation of the Site's national security mission, the first major attempt to realign Site activities to cleanup was reflected in the 1992 Mission Transition Report. Later attempts to define the Site's future mission activities included the Congressionally mandated Baseline Environmental Management Report (BEMR I) published in March 1995, and the Site Strategic Plan published in September 1995.

In July 1995, a new integrating contract replaced the former M&O contractor, Kaiser-Hill (K-H) assumed responsibility for Site operations. K-H initiated ASAP as a means to improve efficiency and reduce costs of many of the current Site work processes and to greatly accelerate the cleanup and closure of the Site, at the same time responding to declining budgets for the Site.

In October of 1995, representatives of DOE, the State of Colorado, EPA, K-H, and the Defense Nuclear Facilities Safety Board (DNFSB) met to discuss a path forward for the cleanup of Rocky Flats. On November 8, 1995, DOE, EPA, and the State issued a Draft Conceptual Vision of the Site to help guide the future direction of Rocky Flats. The idea behind the Vision was to decide what the Site would look like in its final state to enable the representatives to draft a subsequent regulatory agreement in early 1996 addressing the means to achieve that end. Figure 2.1-6.

Table 2-1-1 provides a list of the type of production related operations at Rocky Flats from 1952 through 1989, when the production facilities shut down. Figures 2.1-7, 2.1-8, 2.1-9, and 2.1-10 are maps of the existing plutonium facilities, the infrastructure facilities, the IHSSs and OUs, and the waste management facilities.

Figure 2.1-1

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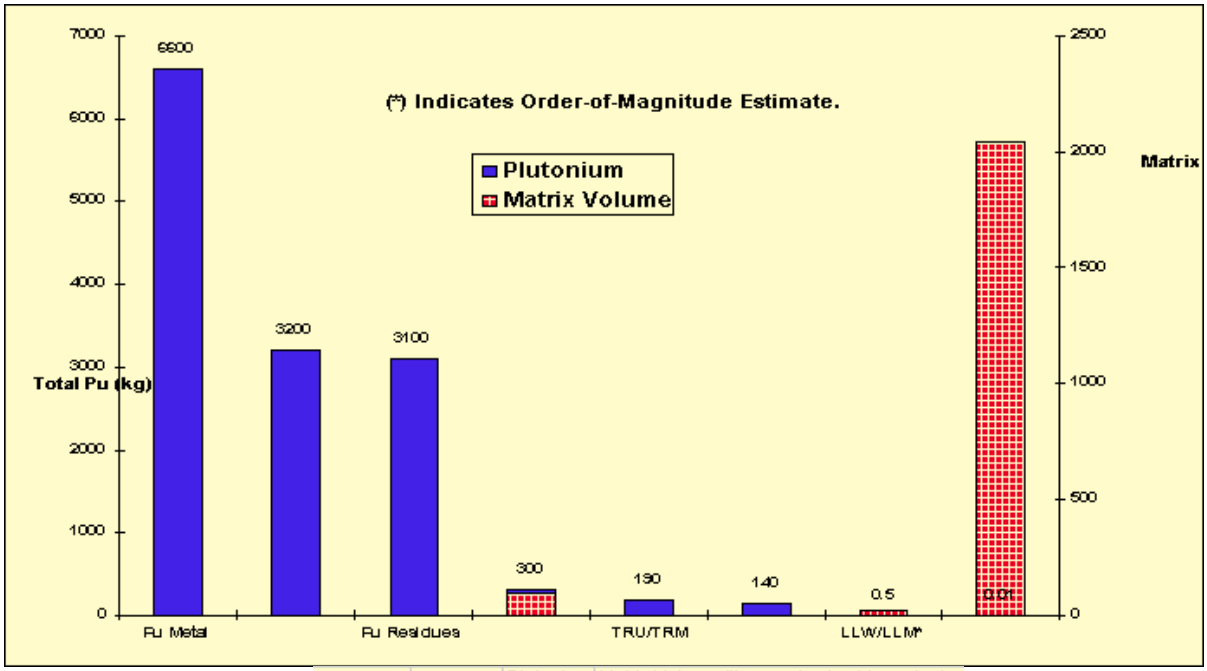
Figure 2.1-2

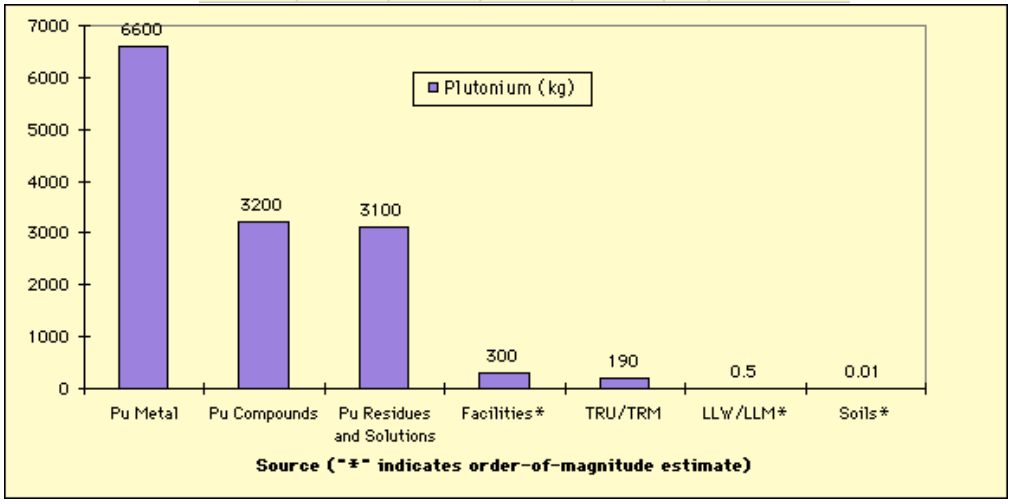
(This figure was not submitted)

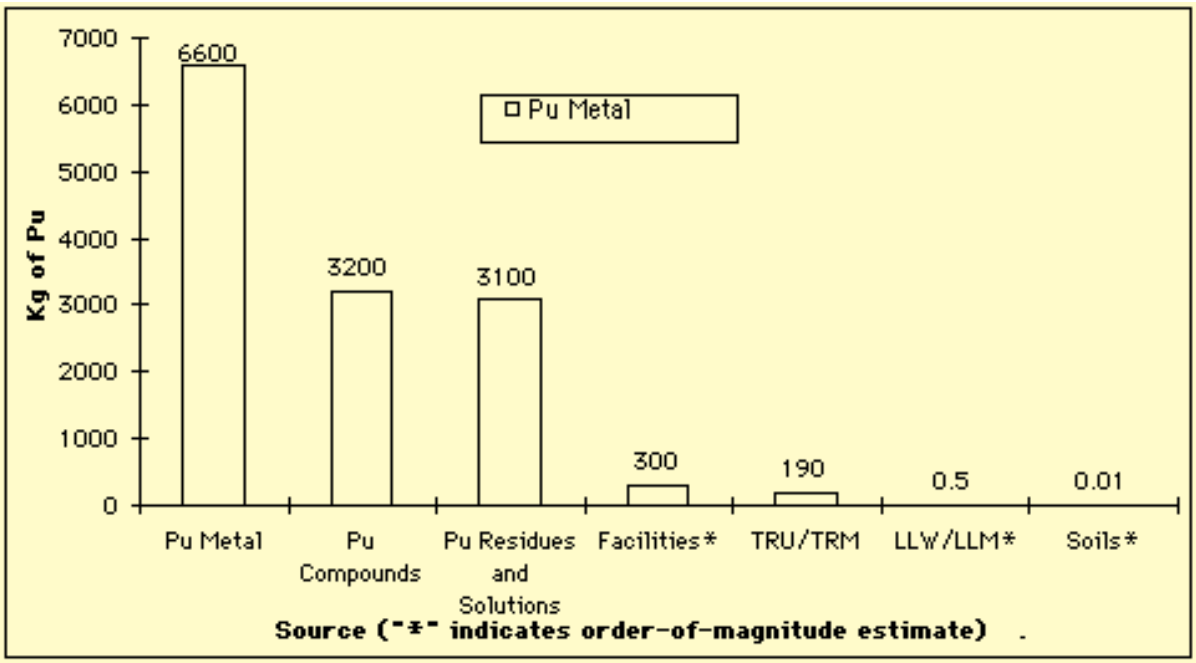
Figure 2.1-3

(This figure was not submitted)



	Plutonium	Matrix Volume (thousands of cubic meters)
Pu Metal	6600	0.0033
Pu Compounds	3200	0.0016
Pu Residues and Solut	3100	1.08
Facilities*	300	93.7
TRU/TRM	190	1.16
LLW/LLM*	0.5	23.4
Soils*	0.01	2045




7000
6000
5000
4000
3000
2000
1000
0
Kg of Pu
6600
3200
3100
300
190
0.5
0.01
Pu Metal
Pu Metal
Pu Compounds
Pu Residues and Solutions
Facilities*
TRU/TRM
LLW/LLM*
Soils*
Source ("*" indicates order-of-magnitude estimate)

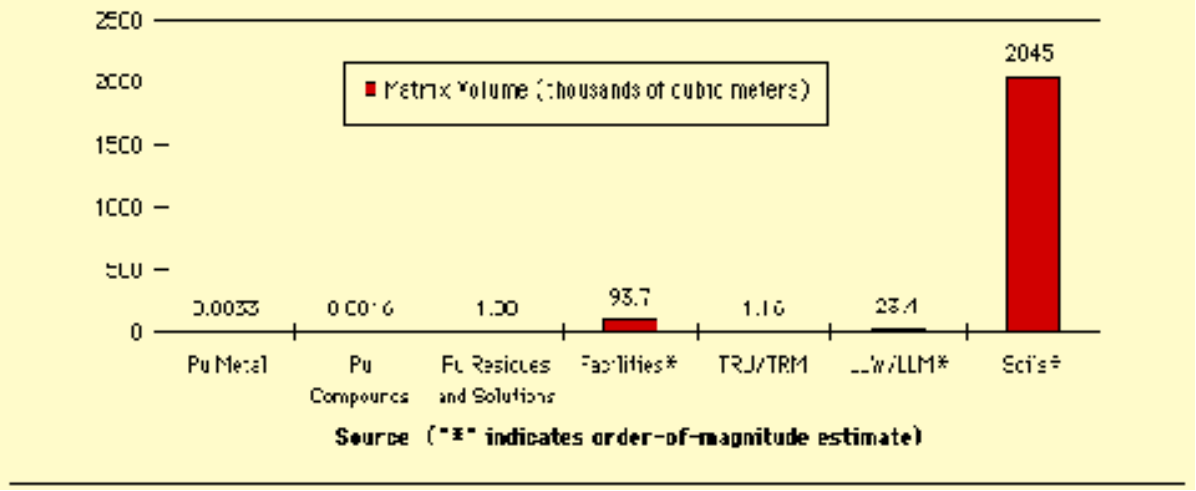

2500
2000
1500
1000
500
0
Metric Volume (thousands of cubic meters)
0.0033
0.0016
1.30
93.7
1.16
23.4
2045
Pu Metal
Pu Compounds
Pu Residues and Solutions
Facilities*
TRU/TRM
LLW/LLM*
Soils*
Source ("*" indicates order-of-magnitude estimate)

Table 2.1-1 History of Operations

Locations and Operational Dates of Major Production-related Operations at RFETS from 1953 through 1989

Operation	Plutonium	Enriched Uranium	Depleted Uranium	Stainless Steel	Beryllium
Casting and/or Fabrication	Bldg. 771 (1953-1957)	Bldg. 881 (1953-1966)	Bldg. 444 (1953-1989)	(not active on a production scale at RFP until 1966)	Bldg. 444 (1958-1989)
	Bldg. 776 (1958-1969)	Bldg. 883 (1957-1964)	Bldg. 883 (1957-1989)	Bldg. 881 (1966-1984)	Bldg. 883 (1962-mid-1980s)
	Bldg. 707 (1970-1989)	(not active on a production scale after 1964)		Bldg. 460 (1984-1994)	
Assembly	Bldg. 991 (final) (1953-mid-1960s)	Bldg. 991 (final) (1953-mid-1960s)	Bldg. 444/447 (1953/56-1989) 991 (final) (1953-mid-1960s)	(not active at RFP until 1966)	Bldg. 444 (1958-1989)
	Bldg. 777 (1958-1957)	Bldg. 777 (final) (1958-mid-1960s)	Bldg. 777 (final) (1958-1969)	Bldg. 777 (final) (1966-1969)	Bldg. 777 (final) (1958-1969)
	Bldg. 707 (final) (1970-1989)	Bldg. 707 (final) (1970-1989)			
Disassembly of Site-returns	Bldg. 777 (1958-1989)	Bldg. 777 (1958-1989)	(not conducted for recovery)	(not conducted for recovery)	(not conducted for recovery)
Metal Recovery	Bldg. 771 (1953-1989)	Bldg. 881 (1952-1964)	(not conducted)	(not conducted)	(not conducted)
	Bldg. 371 (pilot-scale) (1980s)	Bldg. 771 (oralloy leach) (1964-1989)			

Figure 2.1-6

(This figure was not submitted)

Figure 2.1-7

(This figure was not submitted)

Figure 2.1-8

(This figure was not submitted)

Figure 2.1-9

(This figure was not submitted)

Figure 2.1-10

(This figure was not submitted)

2.2. Environmental Setting

Site and Regional Information:

Figure 1.1 shows the location of the Site within the Denver Metro area. Approximately 2 million people live within a 50-mile radius of the Site. The area within 10 miles of the Site is located in three counties: Adams, Boulder, and Jefferson County. Adams County, east of the Site, includes portions of the cities of Arvada, Broomfield, and Westminster. Most of this area is under the jurisdiction of the cities.

The Site and most of the area within 10 miles to the east, south, and west is located in Jefferson County. Directly north of the Site is Boulder County. In general, site planning has required coordination with both Boulder and Jefferson counties. Land directly west of the Site is planned, primarily for industrial use with possible residential expansion farther west. Land adjacent to the Site's southern boundary is planned for industrial expansion with some low density residential development.

To the east of the Site, the land is planned for commercial/industrial in the northeast corner adjacent to the area near the proposed 96th Street interchange. Open space will extend south the rest of the length of the Site with planned recreational uses farther east. The area immediately surrounding Standley Lake is planned for open space with limited residential use. In Figure 2.2-1, the Future Land Use Map identifies future commercial, industrial, and office uses (red), mixed and special uses (yellow), and open space and park uses (green).

The area north of the Site is in Boulder County from Foothills Highway 93 to McCaslin Boulevard. The county government follows guidelines established in the Boulder Valley Comprehensive Plan which projects limited residential expansion, although there is a 3-mile deep stretch of open space immediately adjacent to Colorado Highway 128. The northeast corner of the land adjacent to the Site is planned commercial development. Nearby reservoirs receive water that passes through the Site. Contaminants generated by historical activities are present in reservoirs outside Site boundaries.

The Site lies approximately 4 miles east of the Front Range section of the southern Rocky Mountains along the western edge of the Colorado Piedmont section of the Great Plains Physiographic Province. Located at an elevation of approximately 6000 feet the Site is on the eastern edge of a geological bench known locally as Rocky Flats. This bench is approximately 5 miles wide in a east-west direction. The dominant features in the area are alluvial fans that have been locally dissected and reworked by stream processes. The processes have formed moderately steep hill slopes adjacent to intermittent streams that drain the area. (Figure 2.2-2)

The area is underlain by the Denver Basin, which contains more than l0,000 feet of sedimentary rocks deposited 310 million to 65 million years ago that have been locally folded and faulted. The sedimentary bedrock is overlain by alluvial gravels deposited during the last 1.8 million years that cap erosional surfaces of several distinct ages. The Site is situated on the Rocky Flats Alluvium, an alluvial fan deposit, varying in thickness from approximately 103 feet to less than 10 feet and providing a gravel cover over the bedrock.

Figure 2.2-1 Future Land Use Map
(This figure was not submitted)

Figure 2.2-2 Opportunities and Constraints
(This figure was not submitted)

Seismic activity of the area is low, and landslides and subsidence are not likely, except for hill slopes adjacent to stream drainages. The surface soils are chiefly moderately deep, well-drained clay, cobbly clay, and sandy loams, with moderate-to-low permeability.

Strong convective activity and thunderstorms are common in this area during summer. This activity can produce severe anomalies on normal airflow patterns because of strong inflow regions or outflow microbursts caused by accompanying rain shafts. The windstorm season runs from late November to mid-April, with the height of the season usually occurring in January. Meteorology can be influenced by chinook windstorms, which is a phenomenon characterized by strong winds moving from west to east over the continental divide. These windstorms typically last 8 to 16 hours and are very gusty in nature.

The Site experiences windstorms with gusts exceeding 75 mph in almost every season; with gusts exceeding 100 mph every three to four years. Winds, though variable, are predominately northwesterly. These winds often reach 70-80 mph and have been recorded in excess of 120 mph.

Temperatures onsite exhibit large diurnal and annual ranges. In January, the average minimum and maximum temperatures recorded at locations in the vicinity of the Site are approximately 19°F and 45°F, respectively. The average minimum and maximum temperatures in July are approximately 59°F and 88°F, respectively.

The average annual precipitation is estimated at 15.16 inches. Normally, more than 80 percent of the precipitation falls between April and September. At times, heavy runoff occurs, particularly during thunderstorms and spring thaws, along creeks that traverse the Site. Some flooding due to poor drainage from broken/plugged storm sewers has occurred onsite. However, streambeds are considerably lower than the facilities and the terrain provides excellent drainage.

On average, tornadoes observed near the Rocky Mountains are smaller and contain less energy than those occurring farther east. There is a low probability of a tornado occurring onsite, and consequently, a low probability of damage.

Surface Water - Surface drainage onsite generally occurs west to east along five intermittent streams. Three of these streams drain the main Site facilities area. Some of the streams through the main Site area drain into Standley Lake, about 6 km to the southeast, which is used as a municipal water supply. Surface runoff from the main plant area is collected in an interceptor ditch, diverted to a temporary holding pond, and piped into Broomfield Diversion Ditch, which bypasses the reservoir that supplies water for Broomfield. Two major tributaries of the South Platte River emerge from the foothills and flow northeast through the northern portion of the site area. The central and southern portions of the area are drained by creeks that generally flow due east from the foothills and uplands. The elevation of the area is approximately 6,000 feet well above the 500-year floodplain elevation.

Three natural ephemeral streams drain the Site and generally flow from west to east: Woman Creek, Walnut Creek, and Rock Creek. Surface water flow is the result of runoff from precipitation, baseflow, man-made diversions, and sewage treatment plant discharges. Runoff averages 1 percent of rainfall; the small percentage is due to the high infiltration rates in the alluvium.

Woman Creek basin drains the southern part of the Site. The drainage basin is approximately 1,900 acres and surface water flows to the east, eventually draining into Standley Lake. Smaller tributary branches from Woman Creek west of the Site divert flow to Mower Reservoir.

Walnut Creek drainage basin receives runoff from the Site and drains the northern portion of the buffer zone. Tributaries to Walnut Creek are three ephemeral streams: Dry Creek, North Walnut Creek, and South Walnut Creek, encompassing a total area of 1,843 acres.

A series of retention ponds have been constructed to control surface-water runoff and plant discharges. The retention ponds on North Walnut Creek drainage are designated A1 through A4. Ponds B 1 through B5 are located on South Walnut Creek. Pond B3 receives effluent outfall from the Sewage Treatment Plant. Retention ponds on Woman Creek are designated C1 and C2. Pond C1 receives natural runoff, while Pond C2 receives diverted water from South Interceptor Ditch. Flow from Woman Creek is diverted north of Pond C2. The Landfill Pond receives leachate from the upgradient Present Landfill. Water from this pond is spray irrigated near the shore.

Water from Ponds B5 and C2 are diverted to Pond A4 and filtered through granular activated carbon (GAC) treatment units prior to being discharged into Woman Creek. Treated effluent must comply with the National Pollutant Discharge Elimination System Permit. West of the Site, flow from Walnut Creek bypasses Great Western Reservoir through Broomfield Diversion Ditch and is treated at the Broomfield Water Treatment Plant.

Groundwater - Groundwater onsite flows through unconsolidated alluvium, colluvium, and consolidated bedrock. Rocky Flats Alluvium and Valley-Fill Alluvium are the main unconsolidated groundwater systems, while bedrock groundwater-systems are comprised of the Arapaho and Laramie-Fox Hills aquifers. Recharge to these groundwater systems occurs as infiltration from precipitation, effluent streams, diversion canals, and retention ponds. Discharge occurs through seeps, baseflow to streams, and evapotranspiration.

Wetlands: There are approximately 107 acres of wetlands and 84,970 feet of linear wetlands onsite. The wetlands include open lakes, ponds, intermittent streams, and hillside seeps. Linear wetlands include drainages and ditches. These wetlands are jurisdictional and defined to meet three major criteria: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology.

Wetlands onsite are concentrated near six ephemeral streams and six ditches that traverse the property. The most important streams are Walnut Creek, South Walnut Creek, and Woman Creek, which drain the Site. The other three streams are Coal Creek, Rock Creek, and Leyden Gulch. The ditches are Last Chance, Church, McKay, Kinnear, Reservoir Co., and Smart Ditch.

Vegetation: The Site is located at an elevation of approximately 6,000 feet above sea level, at an approximate elevation where plains grassland vegetation meets lower montane forest. Present vegetation of the upper plains grassland region has been characterized as consisting primarily of heavily grazed pastures, composed of a mixture of herbs and relatively unpalatable grasses. In isolated, undisturbed sites, there are patches of big and little bluestem, needle grass, and side-oats grama. Prickly pear cactus and yucca are abundant where overgrazing has been extreme.

Wild plums and hawthorn are common in small ravines. Although not at the Site, the lower montane forest region is characterized by Ponderosa pine and common juniper in addition to patches of grasses and flowering herbs. Willows, cottonwood, and river birch grow along streams.

Habitat potentially suitable for two plant species, Federal Category 2 Colorado Butterfly Plant and proposed Federally threatened Diluvium Lady's-Tresses Orchid, are present onsite. In addition, habitat potentially suitable for two species of special concern to the State of Colorado, the Forktip Threeawn and Toothcup, are also present. No individual specimens of Colorado Butterfly Plant, Diluvium Lady'-Tresses Orchid, Forktip Threeawn or Toothcup were observed during the reconnaissance surveys. No currently listed rare or endangered plant species are expected to occur onsite.

Wildlife: There are no effective barriers to animal migration or movement on or off undeveloped areas of the Site which support a variety of animals associated with the Western Prairie Regions. No rare or endangered species have been reported or have been found among wildlife inhabiting or migrating through the area. The most common large animal is the mule deer, of which most of an estimated 100-125 appear to be permanent residents of the Site. White-tailed jack rabbits and the desert cottontail also inhabit the area. Carnivores in the area include coyote, red fox, striped skunk, and the long-tailed weasel. Badger and raccoon are occasionally observed, and muskrat are in the vicinity of streams and ponds.

The Site harbors several state species of concern but no species currently listed by the United States Fish and Wildlife Service (IJSFWS) as threatened or endangered. Preble's meadow jumping mice, a Federal Category 2 (C2) taxon and a Colorado State Species of Concern, have been captured in the lower portions of all three Site watersheds, Figure 2.2-3. The riparian shrublands and riparian woodlands have been identified as potential habitat for this species. While listed as a Federal Candidate Species, and petitioned for listing, the Preble has not been elevated to a proposed, threatened or endangered status. Other Federal Candidate Species that have been recorded regularly onsite include ferruginous hawks and loggerhead shrikes.

The Site has a habitat that may be suitable for eleven wildlife species which are endangered or are candidates for Federal Listing. These include the endangered Black-Footed Ferret, Peregrine Falcon, and Bald Eagle. Although the Peregrine Falcon was not observed during the reconnaissance level surveys, two historic nest sites are present within 10 miles of the Site. The Peregrine Falcon Recovery Plan discourages land-use practices that would adversely alter the character of the hunting habitat or prey base within a 10-mile radius of a nesting cliff. The Bald Eagle has been identified as occasionally using the habitat between 0.3 and 1.1 miles from the Site during the winter months. Habitat use by Bald Eagles is expected to be casual if it occurs at all.

A potentially suitable habitat is also present for six Federal Category 2 wildlife species, including the white-faced ibis, ferruginous hawk, mountain plover, long-billed curlew, Preble's meadow jumping mouse, and swift fox. Insufficient information is available to determine if habitat for Federal Category 2 Texas Horned Lizard is present onsite. Habitat potentially suitable for the western snowy plover is not present onsite.

Figure 2.2-3

(This figure was not submitted)

2.3. Current and Adjacent Site Uses

Current Land Use

Land for the original Site was acquired by the Atomic Energy Commission (AEC) in 1951 from six landowners. At that time, the purchase included 2,520 acres of land situated roughly in the center of a rural and largely undeveloped 15-square mile area. In 1951, the 2,520-acre parcel was unoccupied except for cattle grazing. In 1972, the U.S. Atomic Energy Commission asked the Corps of Engineers to negotiate for purchase of an additional 4,550 acres surrounding the Site to comprise a buffer zone at a depth of one mile to 1 1/2 miles around the Site. Congress appropriated $11.4 million for the acquisition which was completed in early 1975. The final acquisition created a 6,550-acre site complex, which continues to form the Site boundary today.

Reasons for acquiring the buffer zone land were stated in the report, Environmental Statement: Land Acquisition Rocky Flats Plant Colorado, April 1972 (WASH 1518). This report was prepared to comply with the National Environmental Policy Act of 1969. In it, the AEC stated that the buffer zone would minimize problems that often arise from proximity of industrial facilities to residential communities. At that time, land development, particularly residential development, was under consideration for land parcels adjacent to the Site. The AEC position was that an "aesthetically unattractive industrial facility" should remain isolated so as not interfere with community life.

Preservation of the area's ecological state was stated as an additional benefit. Creation of Open Space or "greenbelt" programs were of strong interest for State and County planners during the early 1970s, and local citizens were concerned about the Denver-Boulder area merging into a megalopolis. The AEC found that the proposed buffer zone would align with a greenbelt recommended by the Colorado State Environmental Commission, as part of their greenbelt concept. In addition, because the buffer zone would be maintained as an undeveloped open area, the AEC stated that "the buffer zone would provide an additional margin of safety in the event of a plant accident, which, although extremely unlikely, cannot be statistically ruled out."

The policy continues with a requirement to develop a comprehensive planning process, and as an end product, publish the Comprehensive Plan. To address the intent of the draft policy, DOE-RFFO initiated direction for this Comprehensive Plan.

Surrounding Land Uses: Rocky Flats adjoins the cities of Arvada, Westminster, Broomfield, Superior and Boulder, as well as unincorporated portions of Jefferson and Boulder Counties. Land around the Site primarily consists of ranchland, preserved open space, mining areas and low-density residential areas. See Figure 2.1-3. However, this rural pattern is beginning to change due to spreading development.

The towns of Superior and Broomfield have already experienced extensive development north and northeast of the Site. There is potential for similar development south and west of the Site. See Figure 2.2-1. The major development east and southeast of the Site is Jefferson Center, an approved 18,000 acre industrial, office, commercial and residential community. Also, just southwest of Rocky Flats are state-owned lands that are currently going through the mining approval process. These lands could be converted to industrial and office use in the future. A long Highway 93, an area of land approximately 1,200 feet wide adjacent to the Site

boundary is available for eventual development, open space or highway right of way. The 280 acre National Renewable Energy Laboratory Wind Site is in the northwest corner of the buffer zone on lands transferred to then by DOE. Preserved open space is the primary existing and proposed use of the lands north and east of Rocky Flats.

There are two reservoirs just downstream from the Site that supply drinking water to the cities of Broomfield, Westminster, Thornton and Northglenn. Great Western Reservoir is being replaced. Standley Lake is used for irrigation, domestic water supply, recreation and wildlife enhancement and preservation. To ensure safe water at Standley Lake, a protection reservoir is under construction upstream just east of Rocky Flats. To ensure safe drinking water for Broomfield, the Great Western Reservoir is being replaced.

2.4. Influencing Factors

Visual and Physiographic Character: Close to the Front Range Mountain Backdrop on a high plateau, the Rocky Flats Site features strong views of the mountains to the west and eastward across the plains to Denver. Due to lack of immediately surrounding development, there is strong feeling of surrounding open space from anywhere on-Site.

The land itself is diverse with steep drainages, slopes and long east/west sloping ridgelines. Although it is visually dominated by grasslands, there are dense stands of shrubs interspersed with cottonwoods along the drainages and even on some hillsides where seeps occur.

In addition, historic features such as the old Lindsey Ranch and an old stage coach orchard identify the land's uses before Rocky Flats became a federal facility.

Grazing: Cattle have grazed in the Rocky Flats area since the early ranching days of the 1880's. But as the Rocky Flats Site developed and greater protection was needed, grazing was eliminated. As a result, some lands have not been grazed for well over 10 years.

If grazing is considered for the future, management decisions must be carefully planned to preserve the abundance and diversity of existing wildlife, as well as the Preble's Meadow Jumping Mouse habitat.

National Environmental Research Park Program: A valuable ecological environment, the Rocky Flats Site is being considered for inclusion in the National Environmental Research Park Program. Although initiation into the program may require some public exclusion in order to maintain the natural condition of the landscape, activities in the industrial area would not be affected, and the designation could provide the basis for additional ecological studies.

Cultural Resources: Two cultural resource surveys were conducted at the Rocky Flats Site in 1989 and in 1991. While the surveys identified points of local interest in the Buffer Zone, such as Lindsay Ranch and a former stage coach stop, no sites or artifacts were found that might render the Site eligible for listing on the National Register of Historic Places.

A survey of the industrial area has more recently been prepared. The survey report concludes that several of the facilities in the industrial area are of historic importance

because of the role they played in the Site's contribution to the cold war. The State Historic Preservation Office (SHPO) has agreed with these conclusions. Future discussions with the SHPO will determine how the historic information at the Site will be preserved or recorded. The Site is also preparing a cultural resource management plan that will provide specific guidelines on how to preserve information if a federal facility is to altered or demolished.

Mineral Rights Ownership on Rocky Flats: When the government bought lands currently known as the Rocky Flats Site they chose not to acquire the mineral rights. A bout 94 percent of the Site's mineral rights are held by private parties. The fact that there are many and varied owners further compounds the complex situation. Mining has occurred on or adjacent to the site for at least the last 60 years. Mineral extraction has included oil, coal, ore iron, sand, clay and gravel.

Mining is currently ongoing in the northwest corner of the Rocky Flats Buffer Zone. Currently, Jefferson County has two applications for mining expansions. One is located in the northwest corner of the Buffer Zone (the Rock Creek drainage area), and one is on a section of State of Colorado land located immediately west of the southwest corner of the Site. To date, contamination has not been an issue in or immediately adjacent to active mining except related to the old spray fields on the west of the Site, adjacent to the west access road, where a record of decision is needed by EPA before mining can occur.

Colorado State law provides for the preservation of commercial mineral deposits (HB. 1529 of 1973). The law generally states that actions should not be taken which generally prevents the mining of a commercial mineral deposit.

Recently mineral rights owners and their lessees have asked to expand current operations further into the Rocky Flats Buffer Zone. These requests are currently being examined by DOE and other applicable parties.

2.5. Facilities, Equipment, and Infrastructure

The Site has numerous facilities within the plant boundaries. They are made up of process buildings, labs, offices, shops, storage buildings, miscellaneous buildings, plant electricity facilities, plant heat facilities, plant water facilities, HVAC facilities, security buildings, utility and other function structures, ER/WM structures, and miscellaneous structures. This information is presented in Table 2.5-1.

Table 2-5-1 Buildings, Facilities, Systems, and Structures at Rocky Flats

Building Function	Number of Buildings
Process Buildings	17
Labs	13
Offices	100
Shops	13
Storage	48
Miscellaneous Building	32
Plant Electricity	16
Plant Heat	7
Plant Water	10
HVAC	35
Security	30
Utility, Other	21
ER/WM Structures	72
Miscellaneous Structures	22
Total	436

Equipment associated with these buildings are being inventoried as each building is identified for D&D. This information will be provided as it becomes available.

'The desired end state at Rocky Flats would be to have no DOE weapons-related activities or infrastructure remaining on-site after a short period of time. However, recognizing the probability of the need to store plutonium and waste on-site for a substantial period of time, a feasible alternative was developed to pursue this objective. A cornerstone in developing the feasible alternative is to recognize two conflicting facts. First, the site is relatively remote from most public or commercial infrastructure and services, but secondly, the more these services are held captive on Site, the more they tend to perpetuate each other.

The cost of infrastructure support is viewed as a key potential safety issue for the future downwind stakeholders. The lower the safe operating cost of the facility, the greater the opportunity to secure long-term funding. This is a problematic issue at the current time. Another important feature of the use of commercially available services will be the development of a services infrastructure which could service other commercial or industrial users of the site (e.g., National Conversion Pilot Project). Considering these benefits, the approach to site infrastructure assumed that all services that could be provided by off-site entities should be. As this study continues, the relative cost impacts of on-site vs. off-site will be more fully evaluated. This will include the fully loaded cost impacts, such as how many employees trigger the need for a cafeteria, laundry, motor pool, and such services. Because of the historical cost of on-site services, priority will be given to keeping the site population below these threshold levels. These threshold levels will also be used to determine when site services can be discontinued.

The summary of the Site Infrastructure strategy and schedule is shown in Table 2.5-2. A map of the Site Infrastructure facilities is shown in Figure 2.1-8.

Table 2.5-2 CONFIGURATION OF INFRASTRUCTURE SYSTEMS WITH MOST FEASIBLE ALTERNATIVE

System	Disposition	Start Schedule	End Schedule
UTILITIES			
Water - fire drinking, process	Connect to municipal system Booster pumps and at-grade storage for fire water	Oct-96	Sep-98
Sewage	New sewer lines and new small, zero-discharge lagoon system	Oct-01	Sep-02
Process waste water	None	Oct-01	Sep-02
Electricity	Dual source direct to building by PSCo with standby power as part of building pkg	Oct-98	Sep-99
Gas	Direct to building by PSCo	Oct-98	Sep-99
Fuel oil	None	Oct-96	Sep-97
Steam	None or produced in building	Oct-01	Sep-02
Nitrogen	No production on-site	Oct-01	Sep-0
Telephone	Commercial office system	Oct-98	Sep-99
Computer	Client/server system	Oct-98	Sep-99
Radio-pager	Commercial system	Oct-98	Sep-99
LS/DW	Building specific with control in EOC	Oct-01	Sep-02
SERVICES			
Fire	Contract with local fire district	Jan-02	Dec-03
Industrial Security	On-site forces		
Medical	Contract with local medical institution	Jan-96	Oct-96
Emergency Preparedness	Communications center (small-scale EOC) collateral duties by on-site personnel		
Food service	None		
Road maintenance	Main connector turned over to county Local roads and parking by commercial contractor as needed	Jan-99	Oct-99
Snow removal	Commercial contractor for parking lots Turn main road between gates over to county	Jan-99	Oct-99
Process maintenance	By on-site staff with specialty contractors as current	Jan-99	Oct-99
Vehicles	Assume no more than 15 vehicles with commercial maintenance through GSA	Jan-99	
Shipping/Rec Trucking	Commercial operations using building shipping/receiving area	Jan-99	Oct-98
Custodial	Contract w/janitorial service	Jan-03	Oct-99
PU&D Activities	Use local Federal Center	Jan-97	Oct-03
Analytical Labs	Use off site lab sources		Oct-97
Laundry, Filter/ respirator test	Discontinue services when Pu is in storage and buildings are decontaminated		Dec-95
TECHNICAL SERVICES			
Engineering and Construction Mgmt	Contract with A/E firm	Mar-96	Sep-03
Rad Control	Contract off the site	Oct-96	Oct-97
Health & Safety	Subcontractors provide own services with minimal oversight	Oct-01	Oct-02
PERSONNEL SPACE MANAGEMENT			
Off-site offices	Lease off- site offices for approximately 2500 Lease off-site offices for 350 after FY2003 (requires one full-time building manager)	Jan-96 Jan-96	Sep-03
Relocations	2500 first year, then 300 relocations/year (requires one facility planner after 2003)	Jan-96	Sep-03
Shuttle service	Contracted service for 2 vans from site to off the site facility	Jan-96	Sep-03

2.6. Future Uses for Land, Facilities, and Equipment

The facilities identified in Section 2.5 have a variety of future uses associated with them. All of the process buildings will deactivated. This entails the removal of all equipment, piping, etc., for decontamination (if necessary), and then either sold for reuse or recycle, or disposed of appropriately. The process buildings will then either be decontaminated and leased or sold, or if the contamination is unremovable, demolished and the waste either removed for disposal or left in place. Any buildings associated with infrastructure will be dealt with in the infrastructure modifications, described in Section 2.5. All other structures or buildings will be identified for future use and/or removal. All ASAP alternatives address different land-use availabilities. Each of the alternatives support a minimum of 5,000 acres meeting cleanup standards for unrestricted open space. For the remaining Site acreage, the alternatives describe potential land uses ranging from unrestricted to long-term controlled access. Figure 2.6-1 illustrates the land-use availability that would be supported by each alternative. The land-use percentages for Alternatives 3a through 3e are similar and therefore are grouped into one category.

2.7. Future Uses for Land, Facilities, and Equipment

The facilities identified in Section 2.5 have a variety of future uses associated with them. All of the process buildings will deactivated. This entails the removal of all equipment, piping, etc., for decontamination (if necessary), and then either sold for reuse or recycle, or disposed of appropriately. The process buildings will then either be decontaminated and leased or sold, or if the contamination is unremovable, demolished and the waste either removed for disposal or left in place. Any buildings associated with infrastructure will be dealt with in the infrastructure modifications, described in Section 2.5. All other structures or buildings will be identified for future use and/or removal. All ASAP alternatives address different land-use availabilities. Each of the alternatives support a minimum of 5,000 acres meeting cleanup standards for unrestricted open space. For the remaining Site acreage, the alternatives describe potential land uses ranging from unrestricted to long-term controlled access. Figure 2.6-1 illustrates the land-use availability that would be supported by each alternative. The land-use percentages for Alternatives 3a through 3e are similar and therefore are grouped into one category.

In terms of remediation costs, the Site can be viewed as a collection of acreage. There is a substantial increase in remediation costs as cleanup efforts move toward unrestricted use standards. Any discussion on land-use availability must be closely linked to impacts on waste quantities from decommissioning and remediation activities. A comparison of present and future land uses can be visualized from Figure 2.6-2, the present land use of Rocky Flats, and a vision of future land use developed by the Rocky Flats Future Site Working Group, shown in Figure 2.1-6.

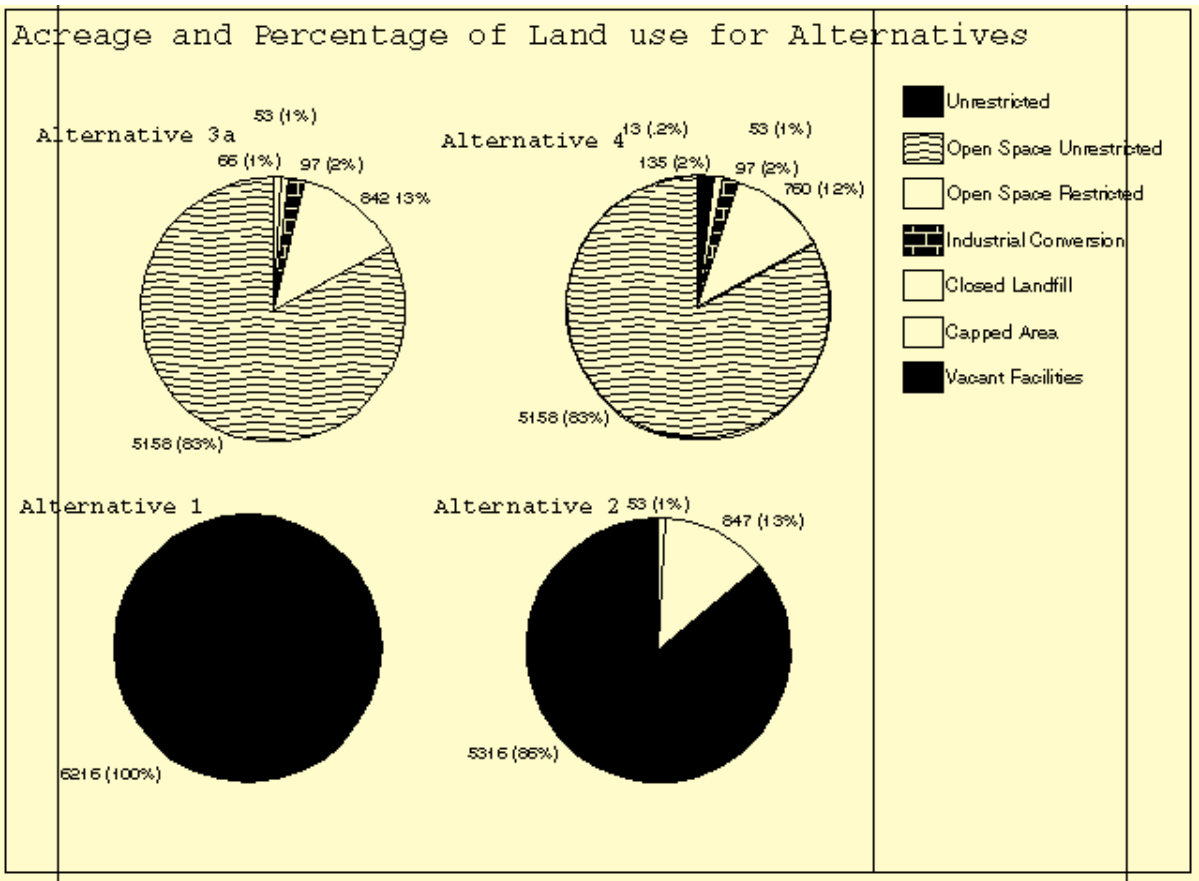


Figure 3-3 Acreages Percentages of Land Use for Alternatives

Figure 2.6-2 Present Conditions at Rocky Flats
(This figure was not submitted)

3. Status of All Site Operations (formerly "Status of ER")

3.1. Current Environmental Restoration Release Sites

The Rocky Flats site is divided into numbered areas for the purposes of site operations. Each building or system is numbered. The Site was also originally divided into 16 Operable Units (OUs) for the purposes of environmental restoration activities. Several of the OUs are identified by the numbered area of the Site which they address, such as, OU 8 - 700 Area. The OUs are further divided into a number of Individual Hazardous Substance Sites (IHSSs). The OUs and IHSSs are shown in Figure 2.1.9. The summary of IHSSs are listed in Table 3.1.1, identifying them with the associated OU. Following is a brief summary of each OU and its current status.

Operable Unit 1 - 881 Hillside: The hillside that slopes southeast from Building 881 has solvents and radionuclides contamination. Several radioactive hot spots have been removed. This OU is slated to be included in a proposed OU addressing groundwater contamination in the Buffer Zone (the area outside the inner boundaries of the plant operations).

Operable Unit 2 - 903 Pad, Mound, & East Trenches: The 903 Pad stored mixed liquid wastes in drums that ultimately leaked. The Mound and East Trenches were used for burial of sewage sludge and liquid solid mixed waste drums. This OU is initiating an early removal action for two trenches, with the remaining contamination being addressed in the new proposed Buffer Zone OU and the Industrial Area OU.

Operable Unit 3 - Off-Site Areas: Three nearby reservoirs were identified as having been possibly contaminated with radionuclides. This OU is in the process of reaching a No Further Action (NFA) Record of Decision (ROD).

Operable Unit 4 - Solar Ponds: The solar ponds were used for evaporation of process waste at the Site, primarily composed of low level radionuclides and high concentrations of nitric acid. Some incidental solvent contamination may have occurred. The sludge has been removed and the ponds are in process of being closed both as RCRA surface impoundments and under CERCLA. Potential groundwater contamination is being addressed under the site-wide groundwater strategy.

Operable Unit 5 - Woman Creek Drainage: Potential low level contamination by radionuclides, organics, and metals. This OU will be addressed under the proposed Buffer Zone OU.

Operable Unit 6 - Walnut Creek Drainage: Potential low level contamination by radionuclides, organics, and metals. This OU will be addressed under the proposed Buffer Zone OU.

Operable Unit 7 - Present Landfill and Inactive Hazardous Waste Storage Area, Sites 114, 203: The landfill received small quantities of hazardous wastes, along with the primary sanitary waste for the Site. The landfill closure is being addressed under a presumptive remedy approach using an Interim Measure / Interim Remedial Action, then finally closure by a NFA ROD.

Operable Unit 8 - 700 Area: Multiple spills and leaks of organics, metals, and radionuclides. This OU is being merged into the new proposed Industrial Area OU.

Operable Unit 9 - Original Process Waste Lines: All process buildings on-site are connected by underground process lines, with associated tanks. There were numerous leaks and spills throughout the system of radionuclides, organics, and metals. Some of these have been closed out. The remaining are expected to be merged into the proposed Industrial Area OU.

Operable Unit 10 - Other Outside Closures: Radioactive, organic, and metal contamination from leaks and spills. This OU may be merged into the proposed Industrial Area OU.

Operable Unit 11 - West Spray Field: The West Spray Field was used to evaporate waste water from the sewage treatment plant and from OU 4. This OU has reached a NFA ROD.

Operable Unit 12 - 400/800 Area Sites: Multiple organic, metal, and radioactive spills and leaks. This OU is expected to be merged into the proposed Industrial Area OU.

Operable Unit 13 - 100 Area: : Multiple organic, metal, and radioactive spills and leaks. This OU is expected to be merged into the proposed Industrial Area OU.

Operable Unit 14 - Radioactive Sites: Multiple locations of radioactive contamination. This OU is expected to be merged into the proposed Industrial Area OU.

Operable Unit 15 - Inside Building Closures: Primarily mixed waste storage areas. This OU has reached a NFA ROD.

Operable Unit 16 - Low Priority Sites: Small hazardous substance spills. This OU has reached a NFA ROD.

Table 3.1.1 Summary of Operable Units and Individual Hazardous Substances at Rocky Flats

Operable Unit Number	Site Grouping	Number of IHSSs
1	881 Hillside	11
2	903 Pad, Mound, & East Trenches	22
3	Off-Site Areas	4
4	Solar Evaporation Ponds	1
5	Woman Creek Drainage	10
6	Walnut Creek Drainage	21
7	Present Landfill & Inactive Hazardous Waste Storage Area	2
8	700 Area	24
9	Original Process Waste Lines	21
10	Other Outside Closures	15
11	West Spray Field	1
12	400/800 Area Sites	11
13	100 Area	14
14	Radioactive Sites	8
15	Inside Building Closures	7
16	Low Priority Sites	7
	TOTAL	179

As mentioned in the OU descriptions, a readjustment of the remaining open OUs is in progress, and will be provided in future updates. Figure 2.6.2 is a geographical map that shows the environmental condition of Rocky Flats. The three types of area identified on the map are:

1) The green area (Buffer Zone) where no storage, release, or disposal of hazardous substances, radiological, or petroleum products has occurred (including no migration of these substances from adjacent areas).

2) The pink and orange areas (Buffer Zone OUs) where storage, release, disposal, and/or migration of hazardous substances, radiological, or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken

3) The red area (Industrial Area OUs) where storage, release, disposal, and/or migration of hazardous substances, radiological, or petroleum products has occurred, removal and/or remedial actions are underway, but all required remedial actions have not been taken.

Figure 3.1-1 indicates above background contamination at selected sampling locations throughout the Site.

Figure 3.1-1 Above Background at Selected Sampling Locations
(This figure was not provided)

3.2. Regulatory Agreements, Permits and Other Legal Drivers

MAJOR STATUTES, REGULATIONS, AGREEMENTS, ORDERS AND PLANS AFFECTING ROCKY FLATS

This section summarizes the major statutes, regulations, agreements, permits, orders, and plans that affect operations and other activities at Rocky, namely, environmental protection, waste management, environmental restoration, nuclear safety, worker health and safety, emergency preparedness, and public involvement. These items described below all act as drivers for site activities, both externally and internally imposed. Each of these drivers has been developed and applied for a particular purpose with minimal integration in most cases. Development of ASAP identified a path forward which will be generally consistent with these drivers but may vary considerably in the details, especially regarding schedules. The next step in development of the ASAP will require specific identification of changes necessary to align each of the implementation efforts for each driver with the integrated ASAP. Table 3.2-1 lists all of the statutes, regulations, etc. that are described below.

ENVIRONMENTAL PROTECTION

National Environmental Policy Act, 42 USC 4321: The National Environmental Policy Act (NEPA) applies to any federal action that could significantly affect the quality of the human environment. For actions triggering NEPA, the federal agency that is proposing the action must identify potential consequences of the action and investigate reasonable alternatives before making a final decision. Periodically, a sitewide Environmental Impact Statement (EIS) may be required to evaluate the cumulative effect of actions that have not, by themselves, required an EIS. The most recent sitewide EIS for the Site was issued in 1980; however, DOE is in the process of developing a new sitewide EIS (SWEIS) to address changes in the Site's mission.

Clean Air Act, 42 USC 7401: Under regulations promulgated in 1989 as amended by the 1990 CAA Amendments, the National Emission Standards for Hazardous Air Pollutants (NESHAPs) limit the radiation dose to the public from airborne radionuclide emissions from DOE facilities to 10 millirem per year (mrem/yr) effective dose equivalent (EDE).

Safe Drinking Water Act, 42 USC 300f to j: The Safe Drinking Water Act (SDWA) sets national standards for contaminant levels in public drinking water systems. DOE is required to monitor drinking water quality for a variety of parameters, including radionuclides. SDWA maximum contaminant level standards are being used in conjunction with risk assessments to develop cleanup standards for remediation activities at Rocky Flats.

Table 3.2-1 LIST OF MAJOR STATUTES, REGULATIONS, AGREEMENTS, ORDERS AND PLANS AFFECTING ROCKY FLATS

ENVIRONMENTAL PROTECTION

1. **National Environmental Policy Act,** 42 USC 432l
2. **Clean Air Act,** 42 USC 7401
3. **Safe Drinking Water Act,** 42 USC 300f to j
4. **Clean Water Act,** 33 USC 1251
5. **National Pollutant Discharge Elimination System (NPDES)/ Federal Facilities Compliance Agreement (FFCA),** EPA Docket No. 91-03-05
6. **Endangered Species Act (ESA), Fish and Wildlife Coordination Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Executive Orders 11990 (Protection of Wetlands) and 11988 (Floodplain Management)**

WASTE MANAGEMENT

7. **Atomic Energy Act, 42 USC 2011**
8. **Solid Waste Disposal Act,** 42 USC 6901
9. **Resource Conservation and Recovery Act,** 42 USC 6921
10. **Federal Facility Compliance Act,** 42 USC 6061
11. **Federal Facility Compliance Agreement II(FFCAII)** - EPA Docket No. RCRA (3008) VIII-89-25
12. **Hazardous Materials Transportation Act,** 49 USC 1801
13. **Settlement Agreement and Compliance Order on Consent,** State of Colorado Docket No. 93-04-23-01
14. **Judicial Order Arising from Sierra Club v. DOE,** Civil Action 89-B-181 (August 25, 1994)
15. **Toxic Substances Control Act (TSCA)**

ENVIRONMENTAL RESTORATION

16. **Comprehensive Environmental Response, Compensation, and Liability Act,** 42 USC 9601
17. **Resource Conservation and Recovery Act,** 42 USC 6921
18. **Interagency Agreement,** EPA Docket Nos. CERCLA-VIII-91-03, RCRA (3008[H])-VIII-91-07, State of Colorado Docket No. 91-01-22-01
19. **Agreement in Principle,** State of Colorado Docket No. 89-06-28
20. **Rocky Flats Cleanup Agreement,** Public Comment Draft, March 14, 1996

NUCLEAR SAFETY

21. **Atomic Energy Act,** as amended by the Price-Anderson Amendments Act of 1988, 42 USC 2011

WORKER HEALTH & SAFETY

22. **Occupational Safety and Health Act,** 29 USC 651
23. **Defense Nuclear Facilities Safety Board Recommendation 94-1 (DNFSB 94-1)**
24. **Defense Nuclear Facilities Safety Board Recommendation 94-3 (DNFSB 94-3)**
25. DOE-STD-3013-94, **Criteria for Safe Storage of Plutonium and Metal Oxides**
26. Health and Safety Procedure 31.11 (HSP 31.11), 1-82500-HSP-31.11, Transfer and Storage of Plutonium for Fire Safety

EMERGENCY PREPAREDNESS

27. **Emergency Planning and Community Right-to-Know Act,** 42 USC 11001

PUBLIC INVOLVEMENT

28. **Public Participation Programs Under the Resource Conservation and Recovery Act,** the Safe Drinking Water Act, and the Clean Water Act, 40 CFR 25
29. **Regulations for Implementing the Procedural Provisions of NEPA**, 40 CFR 1500-1508 (1993)
30. **National Oil and Hazardous Substances Pollution Contingency Plan,** 40 CFR 300
31. **Community Environmental Response Facilitation Act,** 42 USC 9620(h)

Clean Water Act, 33 USC 1251: The regulations that implement the Clean Water Act (CWA) contain limitations and permitting requirements for discharges of hazardous substances from "point sources." Storm water runoff, sewage treatment plant discharges, and water extracted from the ground as part of CERCLA/RCRA cleanup activities are the principal discharges from the Rocky Flats Site. The Colorado Water Quality Act (Colo. Rev. Stat. 25-8101) sets forth the state's requirements for addressing water quality issues in the state of Colorado.

National Pollutant Discharge Elimination System (NPDES)/Federal Facilities Compliance Agreement (FFCA), EPA Docket No. 91-03-05: The NPDES permit program controls the release of pollutants to waters of the United States and requires routine monitoring and reporting of point source discharges. Rocky Flats was first issued an NPDES permit by EPA in 1974. The permit was reissued in 1984, expired in 1989, and was extended administratively until renewed. The permit identifies seven monitoring points for control of discharges, three of which are capable of discharging water off-site.

Endangered Species Act (ESA), Fish and Wildlife Coordination Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Executive Orders 11990 (Protection of Wetlands) and 11988 (Floodplain Management): Collectively, these federal statutes and Executive Orders govern the protection and management of ecological resources across the RFETS. Key aspects in the ecological areas are consideration of threatened or endangered species or their habitats, surveys for potentially impacted species, and mitigation of impacts to wetland areas.

WASTE MANAGEMENT

Atomic Energy Act, 42 USC 2011: Regulations promulgated by the U.S. Nuclear Regulatory Commission (NRC) and the DOE under the Atomic Energy Act (AEA) establish standards for the management of Special Nuclear Material (SNM) and the protection of the public against radiation. Additional NRC requirements apply to the licensing, packaging, preparation, and transportation of radioactive materials and radioactive wastes. Although the NRC does not have regulatory authority over the Rocky Flats Site, or other DOE facilities, DOE complies with applicable NRC requirements through DOE Orders. Rocky Flats generates and stores two types of radioactive wastes that are governed by these DOE Orders: transuranic (TRU) waste and lowlevel waste (LLW)..

Solid Waste Disposal Act, 42 USC 6901: The Solid Waste Disposal Act (SWDA) regulates the management of solid wastes. Solid waste is broadly defined to include any garbage, refuse, sludge, or other discarded material, including solid, liquid, semisolid, and contained gaseous materials resulting from industrial, commercial, mining, or agricultural activities. Sanitary waste is currently being disposed of in the existing onsite landfill, which will soon reach its maximum capacity. Another solid waste landfill is being constructed. It is expected to open in 1997.

Resource Conservation and Recovery Act, 42 USC 6921: Enacted in 1976, the Resource Conservation and Recovery Act (RCRA) substantially expanded the SWDA to regulate solid wastes that are hazardous. Regulations promulgated under RCRA, as amended by the Hazardous and Solid Waste Amendments (HSWA), set forth management standards for generators and transporters of hazardous wastes and prescribe an operating permit program for owners and operators of treatment, storage, and disposal facilities (40 CFR 260-280). The EPA has authorized CDPHE to administer Colorado's RCRA program through the Colorado Hazardous Waste Act

(CHWA) and associated implementing regulations (Colo. Rev. Stat. 25-15-101 and 6 Code Colo. Regs. 1007-3). Hazardous waste operations at Rocky Flats are governed by Permit No. 91-09-30-01, issued by CDPHE. Major modification to RCRA Part B permit and requirements addressed under Federal Facility Compliance Act, 42 USC 6961: The Federal Facility Compliance Act subjects DOE to the imposition of civil fines as penalties for violations of hazardous waste laws at DOE facilities and establishes requirements for developing mixed waste treatment capacities and technologies to treat all the mixed wastes (i.e., radioactive wastes containing hazardous constituents) that are generated and stored at DOE facilities.

Federal Facility Compliance Agreement II (FFCAII) - EPA Docket No. RCRA (3008) VIII89-25: Due to a lack of treatment capability for mixed waste, Rocky Flats has continued to store mixed wastes onsite beyond the 1-year storage limit imposed by RCRA's Land Disposal Restrictions (LDR) (40 CFR 268). The FFCAII, negotiated between DOE and EPA, establishes procedures for achieving compliance with the LDR. The FFCAII went into effect on May 11, 1991, and expired on May 10, 1993. Although a new agreement has not been signed, RFETS continues to comply with the terms of the FFCAII.

Hazardous Materials Transportation Act, 49 USC 1801: Regulations promulgated under this statute define Department of Transportation (DOT) requirements for the packaging, handling, and transportation of hazardous materials (49 CFR 171 - 178). DOE must comply with these regulations when packaging and transporting waste to the Nevada Test Site, Waste Isolation Pilot Plant, and commercial hazardous waste disposal facilities.

Settlement Agreement and Compliance Order on Consent, State of Colorado Docket No. 93-04-23-01(also known as the Mixed Residue Agreement): This administrative compliance order, issued by CDPHE, requires EG&G and DOE to implement a Mixed Residue Reduction Program and prescribe requirements for processing certain mixed residue wastes for eventual offsite disposal.

Judicial Order Arising from Sierra Club v. DOE, Civil Action 89-B-181 (August 25, 1994) (also known as the Residue Compliance Agreement): In 1989, the Sierra Club filed a citizen's enforcement action in U.S. District Court (Civil Action No. 89-B-181), seeking declarations that residues mixed with hazardous wastes are RCRA-regulated wastes. The Sierra Club's request was granted by the court on April 12, 1990 (Sierra Club v. DOE, 734 F. Supp. 946, D. COIQ. 1990), and has undergone several subsequent additions and modifications.

Toxic Substances Control Act (TSCA): This act broadly authorizes the EPA to test for and regulate chemical substances that enter the environment. The main substances covered by TSCA are polychlorinated biphenyls (PCBs) and asbestos.

ENVIRONMENTAL RESTORATION

Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC 9601: The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) establishes criteria for determining liability and governmental response authorities for the release or threat of release of a hazardous substance, pollutant, or contaminant to the environment. The EPA is the regulating authority for this statute. Implementing regulations are contained in the National Contingency Plan (NCP) (40 CFR 300). Rocky Flats was placed on CERCLA's National Priorities List for remedial action in 1989.

Resource Conservation and Recovery Act, 42 USC 6921: In addition to regulating newly generated hazardous wastes, RCRA regulates the cleanup of contaminated solid waste management units through its corrective action requirements for solid waste management units at RCRA-regulated facilities (40 CFR 264, Subpart S). Under this federal regulation, the owner or operator of a facility seeking a RCRA permit must initiate remedial investigations and/or corrective actions, as necessary, to protect human health and the environment.

Interagency Agreement, EPA Docket Nos. CERCLA-VIII-91-03, RCRA (3008[h])-VIII-9107, State of Colorado Docket No. 91 -01 -22-01: This 1991 administrative order, commonly referred to as the "IAG," delineates roles and responsibilities among DOE, the CDPHE, and EPA, and establishes schedules for completing environmental restoration activities at the Site's 16 operable units. The IAG relies on a variety of other legal sources for specific guidance on how to undertake environmental restoration, including CERCLA and RCRA. A new agreement, referred to as the Rocky Flats Cleanup Agreement, is currently out for public comments. Although compliance schedules and environmental management directives will shift, the new agreement is still based on the remediation process prescribed by CERCLA's National Contingency Plan (NCP).

Agreement in Principle, State of Colorado Docket No. 89-06-28: This 1989 administrative agreement between DOE and CDPHE committed DOE to an expanded environmental monitoring program at Rocky Flats, as well as to accelerated cleanup activities at some contaminated sites, and to the implementation of several initiatives for achieving a more comprehensive environmental management system. Although the agreement expired in September 1994, Rocky Flats continued to comply with its provisions, and a new agreement was signed on May 5, 1995.

Rocky Flats Cleanup Agreement, Public Comment Draft, March 14, 1996: The Rocky Flats Cleanup Agreement (RFCA), when final, will be the legally binding agreement between DOE, EPA, & CDPHE to accomplish the required cleanup of radioactive and other hazardous substances contamination at and from the Site. This Agreement will supersede the IAG, when final.

NUCLEAR SAFETY

Atomic Energy Act, as amended by the Price-Anderson Amendments Act of 1988, 42 USC 2011: The Atomic Energy Act (AEA), as amended by the Price-Anderson Amendments Act of 1988 (PAAA), is the principal authority for the regulation of the nuclear industry. In addition, the PAAA subjects DOE contractors to potential civil and criminal penalties for violations of DOE rules, regulations, and orders relating to nuclear safety. Nuclear safety standards are implemented at Rocky Flats through a series of DOE Orders.

WORKER HEALTH & SAFETY

Occupational Safety and Health Act, 29 USC 651: This statute and its associated implementing regulations (29 CFR 1910 and 1926) establish standards for workplace safety and require employers to inform employees about workplace hazards. Occupational Safety and Health Act (OSHA) standards are implemented at Rocky Flats through a series of DOE Orders.

Defense Nuclear Facilities Safety Board Recommendation 94-1 (DNFSB 94-1), pursuant to 42 USC 2286a(5): This is a recommendation for integrated planning and actions to reduce the hazards from liquids and solid residues remaining in production buildings following the halt in production operations.

Defense Nuclear Facilities Safety Board Recommendation 94-3 (DNFSB 94-3), pursuant to 42 USC 2286a(5): This is a recommendation for completion of a seismic and structural analysis of Building 371, which is the currently planned location for consolidated plutonium storage.

DOE-STD-3013-94, Criteria for Safe Storage of Plutonium and Metal Oxides: These criteria apply to safe storage of plutonium metals and oxides, greater than 50% plutonium by weight, for a minimum of 50 years at DOE facilities. Key aspects of the criteria include thermal stabilization of oxide to less than 0.5% loss on ignition, metal or oxide stored in inert atmosphere in a material container, material container sealed in a boundary container, boundary container sealed in a primary containment vessel, and periodic surveillance of filled containers.

Health and Safety Procedure 31.11 (HSP 31.11), 1-82500-HSP-31.11, Transfer and Storage of Plutonium for Fire Safety: This Rocky Flats procedure defines responsibilities and requirements for packaging, transferring, and storing plutonium metals, oxides, and compounds to minimize the possibility of plutonium fires.

EMERGENCY PREPAREDNESS

Emergency Planning and Community Right-to-Know Act, 42 USC 11001: Enacted as an amendment to CERCLA, the Emergency Planning and Community Right-to-Know Act (EPCRA) requires all facilities that handle hazardous chemicals to send location and inventory data to local and state planning officials and to notify the National Response Center, the CDPHE Emergency Management Unit, and the Jefferson County, Colorado, Local Emergency Planning Commission in the event of an actual release. In addition, EPCRA requires that facilities discharging toxic substances to the environment report annually on the total quantity of materials released to all environmental media.

PUBLIC INVOLVEMENT

Public Participation Programs Under the Resource Conservation and Recovery Act, the Safe Drinking Water Act, and the Clean Water Act, 40 CFR 25: This federal regulation describes the minimum requirements and suggested program elements for public participation in activities conducted under the RCRA, SDWA, and CWA. Requirements are prescribed for public information, notification, consultation, and the creation of advisory groups.

Regulations for Implementing the Procedural Provisions of NEPA, 40 CFR 1500- 1508 (1993): These federal regulations describe procedures for implementing NEPA, which contains significant requirements for public involvement, including notice and comment provisions.

National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR 300: This federal regulation, also referred to as the National Contingency Plan (NCP), operates as the blueprint for implementing CERCLA. It includes opportunities for public involvement during the remedial investigation/feasibility study (RI/FS) process and the opportunity to comment on proposed Records of Decision (ROD).

Community Environmental Response Facilitation Act, 42 USC 9620(h): The Community Environmental Response Facilitation Act (CERFA) amended CERCLA to prescribe how obsolete federal facilities should be converted to other uses to minimize impacts on local communities. With implementation of the DOE National Conversion Pilot Project (NCPP), Rocky Flats is taking the first steps toward developing future uses for the Site. The NCPP is based on a proposal from Manufacturing Sciences Corporation to recycle non-plutonium contaminated scrap material by reprocessing and recasting it into containers that will be used to store low-level waste and low-level mixed waste.

3.3. Waste Management and Materials Disposition Activities Impacting Environmental Restoration Project

The mission change at Rocky Flats from nuclear weapons production to environmental cleanup has made formerly serviceable buildings and other structures surplus and no longer essential to the nation's national security interests. As a result, one of the objectives of the ASAP process, therefore, is to bring these materials under direct management control (i.e., into the formal accounting system) by making decisions on their future use and/or dispositioning. Such control can be accomplished by (1) dispositioning the material as containerized or bulk wastes or (2) leaving the material in place based on a determination that it does not constitute an appreciable risk to the public and that distributing the material poses a greater risk than leaving it alone. It is recognized that the contaminants in future waste generation are currently present in equipment, building structures, surrounding soils and other assets.

Much of the contamination exists as trace amounts of pollutants suspended in large quantities of a matrix, such as soil or building rubble. As a result, volumetric estimates of potential waste are inflated because of the large quantities of the matrix that must be removed to eliminate the contaminants.

The purpose of the Waste Management section of ASAP is to develop and discuss alternative means of handling the surplus materials requiring dispositioning as containerized or bulk wastes. Eight alternatives for waste handling are presented. Information is developed to allow stakeholders, regulators, and decision makers to evaluate these alternatives; to determine the best course of action for future waste management; and to ensure that the selected alternative is technically prudent, is fiscally responsible, and results in meaningful risk reduction.

The strategy governing development of waste management alternatives is to present information on the bounding conditions (i.e., maximum and minimum waste handling options), and then discuss several options with intermediate amounts of wastes to be handled. The intermediate options attempt to present a sufficient range of alternatives to provide stakeholders, regulators, and decision makers an understanding of the technical feasibility of the alternatives and an awareness of their respective cost and risk consequences. The analysis incorporates the following aspects of different waste management approaches: (1) minimizing the amount of waste generated as containerized or bulk material, (2) consolidating the waste as much as possible to reduce the volume to be handled, (3) treating only those waste

forms that pose an appreciable public risk and seeking waivers or exemptions for more innocuous waste forms, and (4) challenging regulatory and historical practice constraints that appear to offer minimal technical value and impede the efficient handling of wastes without commensurate benefit in cost or risk reduction.

Far more critical than either ER or waste management activities at Rocky Flats is the disposition of special nuclear material. When the weapon production lines were halted in 1989, many special nuclear materials were left in conditions unsuitable for long-term storage. The objective of near-term processing will be to convert plutonium metal and oxide into forms and conditions or to verify that their existing forms are suitable for safe interim storage and long-term to provide for safe storage of plutonium until final disposition.

For plutonium solid residues (processing by-products containing economically recoverable amounts of plutonium), the near-term objective is to characterize and to mitigate all safety concerns of the existing backlog of residues in decreasing order of identified risk potential. The long-term objectives include the processing, repackaging, safe storage on-site, and/or shipment to an off-site repository.

For plutonium and uranium aqueous solutions, the objective is to eliminate the solutions by converting to appropriate forms for safe interim storage and shipment to an off-site repository.

3.4. Project Support Activities

The following project support activities are integrated into the ASAP approach to cleanup of Rocky Flats: public participation, program management, support programs, site-wide services, and technology development interface. Department Orders and DNFSB findings are also incorporated into the overall ASAP approach. Further discussion is provided in Section 1.1. DOE is the current landlord and has the intent to remain the landlord until the year 2005, at which time, some parts of the Site will probably be available for sale.

4. Installation Relative Risk

A prioritized list of Environmental Restoration (ER) sites was developed to select the top priority sites for remediation. (See Appendix F.) However, since ER is of significantly less concern than the disposition of SNM at Rocky Flats, all projects at Rocky Flats were compared against each other. This is the first year that a Field Budget Submission was assembled by the Site under the new Integrating Management Contract. Under this new contract it was incumbent upon DOE to take an increased role in defining the Site's direction and therefore work priorities. With this increase in DOE involvement in setting Site priorities it was expected that discrete blocks of work could be completed and measurable progress made toward the Site mission. The prioritization of tasks has provided a unified focus for an analysis of the work tasks and subsequent funding decisions. The prioritization checklist (Figure 4.1) was developed by the RFFO Prioritization Team with involvement by all RFFO groups. An analysis of the information provided in the prioritization checklists identified priority trends and major discrepancies. All discrepancies between major differences in work priority were reconciled before final prioritization.

The prioritization checklist is a model that attempts to rank Site work based on six measures of merit. This prioritization tool was designed to structure task

information that supports informed management decisions. The prioritization effort formed the basis for decision making in the FY 98 budget submission. The prioritization process is in a draft form that will be refined and improved throughout the year. The model did not attempt to capture all the attributes and factors that influence management decisions but to apply professional judgment to the tasks, while providing a basis for identifying the tasks with obvious value. The most important tasks, based on management perception, are generally ranked at the top and the less important tasks are near the bottom. This ranking limits the number of tasks within the funded / unfunded boundary and therefore limits the number of funding decisions.

The prioritization model evaluated Site tasks identified at level 4 of the Work Breakdown Structure (WBS), based on the ASAP Phase III Plan. 95 task items were identified at level 4. Each checklist contained a name and number corresponding to the level 4 tasks identified in the WBS. Each RFFO group rated the 95 tasks according to the six measures of merit identified in the checklist. A weighting scale was applied and the total score for each task was computed.

Based upon the results of the model evaluation, a WBS Work Element Prioritization Ranking was prepared. Table 4.1.1, Prioritization Final Data Summary , lists the WBS Level 4 projects in order of priority.

Although in the WBS ranking, each Level 4 WBS element was initially ranked at a High, Medium, or Low category, in the final prioritization, the WBS elements were presented in a numerical prioritization.

Although EM-40's Relative Ranking Evaluation Framework was not used in developing the priority ranking for the WBS Level 4 elements, a similar approach was used in determining a high, medium, or low priority rating. The EM-40 framework relies "on information fundamental to risk assessment: sources, pathways, and receptors", using "relative risks to human health for cancer, toxicity, and industrial safety...." This type of information is not directly applicable to the significant issues at Rocky Flats, which primarily have to do with SNM disposition.

Figure 4.1-1 Prioritization Checklist

Prioritization Checklist

WBS Number:							
Task Name:							
RFFO Organization							
		RATING				**WEIGHT**	**TOTAL**
Measures of Merit		**High**	**Medium**	**Low**	**N/A**	**(proposed)**	**POINTS**
		(10 Points)	**(5 Points)**	**(1 Point)**	**(0 Points)**		
Cost: The completion of this task will free-up money for future work.						30	
Essential Site Activity: Minimum necessary and sufficient to maintain responsible Site conditions.			N/A	N/A		75	
Safety: This task will improve overall site safety.						50	
Performance: The Site can effectively perform this task.						30	
Mission: This task is necessary to completion of the critical site objectives.						50	
Compliance: This task is necessary to achieving regulatory performance.						10	
(Priority Checklist 3/1/96)				Total Task Score			

Table 4.1-1 Prioritization Final Data Summary

Prioritization Final Data Summary			
WBS Chronological Order	**WBS Number**	**WBS Work Element Title**	**Priority Rank**
24	1.1.4.9	Develop SNM Stabilization Capability Projects	1
72	1.1.6.14	Remove 779 Cluster	2
25	1.1.4.10	Operate and Maintain SNM Treatment and Packaging Processes	3
23	1.1.4.8	Develop, Operate and Maintain Pu Storage Facilities	4
60	1.1.6.2	Remove 371/374 Cluster	5
68	1.1.6.10	Remove 771/774 Cluster	6
70	1.1.6.12	Remove 776/777 Cluster	7
73	1.1.6.15	Remove 790 Cluster	8
19	1.1.4.4	Develop, Operate & Maintain TRU/TRUM Waste Storage Facilities	9
62	1.1.6.4	Remove 559 Cluster	10
88	1.1.6.30	Develop Nuclear Production Zone Projects	11
55	1.1.5.28	Remove INFSTM Cluster	12
18	1.1.4.3	Develop, Operate & Maintain LLW and LLMW Storage Facilities	13
21	1.1.4.6	Operate & Maintain Waste Treatment Processes	14
84	1.1.6.26	Remove INFELN Cluster	15
90	1.1.7.2	Provide Site Infrastructure Services and Projects	16
49	1.1.5.22	Remove INFGAS Cluster	17
89	1.1.7.1	Provide Utility Services and Projects	18
39	1.1.5.12	Remove 664 Cluster	19
65	1.1.6.7	Remove 707 Cluster	20
48	1.1.5.21	Remove INFELI Cluster	21
54	1.1.5.27	Remove INFSEW Cluster	22
83	1.1.6.25	Remove SECNPZ Cluster	23
82	1.1.6.24	Remove PWTSN Cluster	24
20	1.1.4.5	Provide Offsite Waste Disposal	25
51	1.1.5.24	Remove INFWTI Cluster	26
85	1.1.6.27	Remove INFWTN Cluster	27
26	1.1.4.11	Provide SNM Offsite Shipment	28
64	1.1.6.6	Remove 569 Cluster	29
50	1.1.5.23	Remove H2OGIZ Cluster	30
57	1.1.5.30	Remediate/Contain Industrial Zone High Risk IHSS Cluster	31
86	1.1.6.28	Remediate/Contain Nuclear Production Zone High Risk IHSS Cluster	32
16	1.1.4.1	Operate & Close 219 Cluster Landfill (OU 7)	33
95	1.1.8.5	Provide RFFO Direction and Support	34
75	1.1.6.17	Remove 881 Cluster	35
92	1.1.8.2	Operate General & Administrative Support Services	36
91	1.1.8.1	Provide Management	37
41	1.1.5.14	Remove 750HAZ Cluster	38
44	1.1.5.17	Remove 903/905 Cluster	39

Prioritization Final Data Summary			
WBS Chronological Order	**WBS Number**	**WBS Work Element Title**	**Priority Rank**
45	1.1.5.18	Remove 904/906 Cluster	40
67	1.1.6.9	Remove 750Pad Cluster	41
76	1.1.6.18	Remove 865/883 Cluster	42
56	1.1.5.29	Remove INFFCM Cluster	43
77	1.1.6.19	Remove 886 Cluster	44
37	1.1.5.10	Remove 444 Cluster	45
13	1.1.3.9	Remediate/Contain Inner Buffer Zone High Risk IHSS Cluster	46
52	1.1.5.25	Remove PWTS Cluster	47
53	1.1.5.26	Remove INFRDS Cluster	48
93	1.1.8.3	Provide General Technical Support Services	49
47	1.1.5.20	Remove SECIZ Cluster	50
81	1.1.6.23	Remove 991 Cluster	51
63	1.1.6.5	Remove 566 Cluster	52
9	1.1.3.5	Remove SECBZI Cluster	53
78	1.1.6.20	Remove 910 Cluster	54
58	1.1.5.31	No-Action/No-Further Action Justification for Industrial Zone Low Risk IHSS Cluster	55
79	1.1.6.21	Remove 964 Cluster	56
32	1.1.5.5	Remove 300/500 Cluster	57
42	1.1.5.15	Remove 850 Cluster	58
33	1.1.5.6	Remove 331 Cluster	59
71	1.1.6.13	Remove 778 Cluster	60
12	1.1.3.8	Develop & Implement Groundwater Management System	61
31	1.1.5.4	Remove 223 Cluster	62
43	1.1.5.16	Remove 891T Cluster	63
80	1.1.6.22	Remove 980 Cluster	64
74	1.1.6.16	Remove 800A Cluster	65
66	1.1.6.8	Remove 750 Cluster	66
6	1.1.3.2	Remove H2OGBZ Cluster	67
8	1.1.3.4	Remove H2OSIZ Cluster	68
7	1.1.3.3	Remove H2OSBZ Cluster	69
3	1.1.1.4	No-Action/No-Further Action Justification for Outer Buffer Zone Low Risk IHSS Cluster	70
40	1.1.5.13	Remove 690T Cluster	71
61	1.1.6.3	Remove 371A Cluster	72
94	1.1.8.4	Provide Programmatic Technical Support Services	73
4	1.1.2.1	No-Action/No-Further Action Justification for Contaminated Buffer Zone	74
87	1.1.6.29	No-Action/No-Further Action Justification for Nuclear Production Zone Low Risk IHSS Cluster	75
59	1.1.6.1	Remove 207 Cluster	76

Prioritization Final Data Summary			
WBS Chronological Order	**WBS Number**	**WBS Work Element Title**	**Priority Rank**
10	1.1.3.6	Operate Ponds and Develop & Implement Surface Water Conversion Project (Flow Through System)	77
30	1.1.5.3	Remove 221/224 Cluster	78
35	1.1.5.8	Remove 440 Cluster	79
69	1.1.6.11	Remove 771A Cluster	80
14	1.1.3.10	No-Action/No-Further Action Justification For Inner Buffer Zone Low Risk IHSS Cluster	81
36	1.1.5.9	Remove 442/452 Cluster	82
29	1.1.5.2	Remove 125/441 Cluster	83
22	1.1.4.7	Develop Waste Management Projects	84
27	1.1.4.12	Develop & Construct New Closure Cap(s)	85
11	1.1.3.7	Develop & Implement Wetlands Conversion Project	86
46	1.1.5.19	Remove AIRMON Cluster	87
1	1.1.1.1	Remove SECBZO Cluster	88
38	1.1.5.11	Remove 460 Cluster	89
2	1.1.1.2	Remove INFMT Cluster	90
5	1.1.3.1	Remove 130 Cluster	91
15	1.1.3.11	Close Old Sanitary Landfill (OU 5)	92
34	1.1.5.7	Remove 371T Cluster	93
28	1.1.5.1	Remove 111 Cluster	94
17	1.1.4.2	Develop, Operate & Close New Sanitary Landfill	95

5. Accelerated Site Action Strategy (formerly "ER Strategy")

5.1. Key Assumptions

- Continual indefinite storage of solutions in their current state is not an acceptable option. Stabilization of these plutonium solutions is required under all alternatives to reduce risks.

- Residue shipment to WIPP or an other offsite repository will be the final step in the approach to managing residues and will occur as soon as possible.

The following assumptions apply to the ASAP alternatives except as noted. Waste storage and disposal analyses are predicated on these basic assumptions:

- Onsite Disposal / Storage
  - Greater than 10 kilograms (kg) of plutonium will be contained in nonhardened, non-HEPA filtered buildings.

- Treatment
  - Onsite treatment alternative selection will be based on economic considerations and technical feasibility. It is recognized that stakeholder acceptability may subsequently override technical and economic selection criteria.

- Offsite Shipment
  - Waste Isolation Pilot Plant (WIPP) will open in April 1998; however, limitations in transport vehicle availability and WIPP waste acceptance will require prolonged onsite storage of TRU / TRM wastes.
  - Temporary offsite storage of TRU and TRM is neither technically prudent nor economically viable.

- Risk-based closure standards for decommissioning will be defined and agreed upon by the Department of Energy (DOE), Colorado Department of Public Health and the Environment (CDPHE), and the Environmental Protection Agency (EPA).

- Buildings which are radiologically uncontaminated and have an economic value could be retained for some future use. The major plutonium buildings have been contaminated within their structure and it is assumed they could never be decontaminated to allow public reuse.

- Pu holdup in ducting and equipment will be removed by the SNM stabilization task to a level which allows for down grading the building security category. The remainder of Pu holdup will be removed by decommissioning.

- Deactivation will be closely followed by other decommissioning (D&D) work. Extensive delays between deactivation and D&D could significantly affect cost estimates.

- Unrestricted release criteria will be developed and accepted by DOE, EPA, CDPHE and stakeholders and regulators.

- The key assumption for the cost and waste estimates is that the detailed cost and waste estimates from Building 779 can be extrapolated accurately to the other major buildings. Varying degrees of contamination, complexity of equipment and systems, and physical state of the contaminant (liquid as compared to solid) can affect the total cost of the option.

- For radiologically contaminated buildings, 75% and for nonradiologically contaminated buildings, 90% of all office equipment (desks, chairs, computers) will be sent to Property, Utilization, and Disposal (PU&D) for disposition.

- Decontamination of highly contaminated areas (e.g., gloveboxes, inside of certain rooms) will consist of wipe down, strip coat, with fixative applied. No new techniques will have to be developed.

- For the purpose of this evaluation, it was assumed that all contaminated soils in IHSSs, PACs, and UBCs would be excavated, thermally treated, and disposed. However, each IHSS would be evaluated on a case-by-case basis and the appropriate remedial action would be implemented. In some cases, this would be excavation and thermal desorption. In other cases, in situ treatment, containment, or another type of remedial action might be more appropriate.

- All disposal costs and treatment to satisfy LDR requirements, if required, would be covered under waste management. Environmental restoration includes excavation of the waste and thermal desorption if necessary.

- The outer buffer zone (excluding the surficial soil low-level plutonium contamination area) is assumed to meet open-space criteria without additional remediation based on the historical use of the area and available data.

- All significant groundwater contamination plumes have been identified.

- Removal of contaminant sources in all alternatives would be effective in limiting contaminant load to groundwater and would allow for effective use of the reactive barriers or other treatment technology if required for groundwater treatment.

- The majority of the groundwater in the industrial area is due to the Site infrastructure. As Site infrastructure decreases, the groundwater level will decrease. Modeling will need to be conducted to determine the impact to the groundwater management system, surface water, and wetlands.

- Where practical and compatible with the building structures, low-level decommissioning waste could be disposed onsite at its point of generation and/or relocated to onsite cells.

- One of the nearby communities would be willing to supply potable water to the Site.

- In the case of Alternative 1, Unrestricted, the buildings will be in an operating condition for an extended time and there is no SNM or waste storage.

- The new interim SNM storage facility will not require an inert atmosphere for storage of the SNM.

- Site population will remain relatively stable during the D&D phase until late in the project and then decline to approximately 300 FTE after implementation of whatever alternative is chosen.

- An emergency response capability, either inherent or contracted, must be maintained as long as any material is stored or any facilities remain onsite.

- Under all the alternatives, Buildings 371, 559, 707 and associated support buildings within the Protected Area (PA) will continue to be operational beyond 2000. Decommissioning activities will extend beyond 2000.

- Building utilities and vital safety systems (VSS) will be required within a building until deactivation is complete. Electricity and fire water to the building will be required through strip-out and decontamination. Deactivated buildings will be in a state of passive ventilation.

- The expected remaining life of the infrastructure facilities, systems, and components before replacement has been factored into the alternatives. If maintenance or compensatory measures can reasonably extend the service life to meet or exceed need dates from ASAP alternative schedules, then some new and/or existing activities may be deleted or descoped.

5.2. Remedy Selection Strategy

The Accelerated Site Action Project (ASAP) represents a breakthrough planning approach for the Site. This planning approach seeks to accomplish accelerated risk reduction and cleanup of the Site, decades before the path forward presented by BEMR II and for billions of dollars less. ASAP was developed as a phased effort to resolve the problem at Rocky Flats which are that the current nuclear material stabilization and environmental cleanup activities are slow, uncertain in outcome, and costly. The basic premise of the ASAP planning approach was to identify the interim and end states for the Site and then to move aggressively toward these states. Early conclusions of the ASAP planning effort were to focus on plutonium stabilization and consolidation, deactivation of nuclear facilities (in order to recoup the high facility baseline costs) and then focus on decommissioning and environmental cleanup. Areas investigated in-depth during the ASAP effort are Special Nuclear Material, Waste Management, Facility Decommissioning, Environmental Restoration, Infrastructure, Cost and Schedule, Implementation, and Risk. The ASAP process has lead to several interesting possibilities such as accelerated deactivation of high operating cost facilities to reduce operating costs quickly; and preferential stabilization of plutonium to reduce risk.

5.3. Site-Wide Action Strategy (formerly "Site-Wide Release Site Strategy")

ASAP is divided into four major planning phases, as described in Table 5.3-1, ASAP Path Forward, and in Figure 5.3-1, ASAP Planning Strategy.

Table 5.3-1
ASAP Path Forward

Phase	Description	Time Period	Status
Phase I	**Feasibility Study for Accelerated, Safe, Cost-Effective Closure**	**9/95 to 10/95**	**Completed**
Phase II	**Alternative Study for Accelerated, Safe, Cost-Effective Closure**	**11/95 to 2/96**	**Completed**
Phase III	**Selection of Recommended Approach**	**1/96 to 9/96**	**Initiated**
Phase IV	**Transformation to Recommended Approach**	**8/96 to 12/96**	

Phase I of the ASAP effort, conducted from August through September 1995, was a proof-of-concept effort that investigated whether a safe, accelerated, and cost-effective closure of the Site was possible compared to the existing extended closure plan presented by the DOE in the BEMR I. ASAP Phase I described a feasible alternative that greatly accelerated risk reduction and interim closure of the Site. The Phase I alternative addressed onsite disposal of low-level and low-level mixed waste (LLW/LLMW); environmental cleanup of high risk areas; contaminated groundwater management; building demolition; and interim storage of Special Nuclear Material (SNM) and transuranic waste.

ASAP Phase I explored one specific route to accelerated Site closure that used onsite disposal of primary and secondary wastes, where appropriate. During the subsequent analysis of Phase I, two key observations were made: (1) there were many accelerated safe-closure alternatives that appeared to be superior in cost and schedule compared with the path forward described in the BEMR I (the existing planning vehicle); and (2) each alternative had a different success probability based on risk, safety, technical, regulatory, social, political, and financial issues.

An immediate decision had to be made regarding the scope of ASAP Phase II. Two paths were available: (1) Phase II could be a deeper vertical treatment of the feasible alternatives of the Phase I study; or (2) Phase II could be expanded horizontally to assess the various alternatives in order to identify the most promising Site alternative for in-depth exploration in Phase III.

The decision to develop information about various routes to accelerated safe closure at Rocky Flats was driven by stakeholder and regulator input, and the desire to assist decision-makers in their deliberations over the future Vision for Rocky Flats.

Four major alternatives, along with several derivative variations, were developed. The differences among the alternatives are outlined to permit the reader to evaluate impacts, and to either select a preferred alternative or form a hybrid for future evaluation

The ASAP Phase II family of alternatives was based on two key objectives: (1) provide upper and lower bounds for the available alternatives representing the current Draft Conceptual Vision of November 8, 1995; and (2) address the issues raised by stakeholders and regulators. Each alternative encompasses a set of integrated choices relating to the five specialty task areas: (1) SNM Stabilization and Consolidation and Storage; (2) Waste Management; (3) Facility Decommissioning; (4) Environmental Restoration; and (5) Infrastructure.

A comparative analysis of the alternatives was performed for ASAP II. A more detailed analysis will be completed during ASAP Phase III, during which time stakeholders, regulators, and decision makers will work to select the alternative most compatible with the final vision for the Site.

Each alternative identified during Phase II contains assumptions and activities common to most, if not all, of the other alternatives. If maximum technical and schedule improvement, and cost-efficiency are to be realized by ASAP, then further analysis of these common assumptions and activities during Phase III is necessary. Special studies, cost-benefit analysis, and risk analysis will be performed to maximize risk reduction and reduce uncertainties while improving productivity and efficiency. Also, as stakeholder and regulator groups from the general public, state, and federal sectors work toward selection of an alternative to recommend, special study topics may be identified.

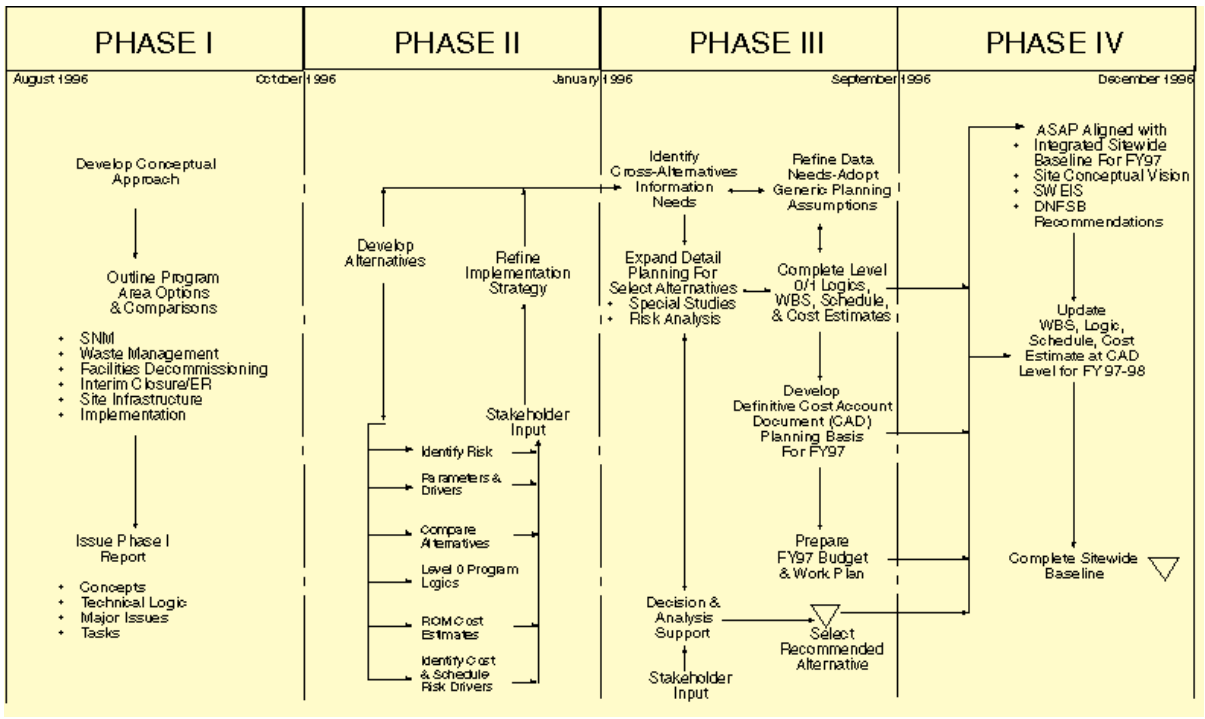
Recommendation of the preferred alternative will occur during Phase III. Following this decision, the results of earlier special studies, risk analysis, cost-benefit analysis, and systems engineering studies will be integrated during the development of a single ASAP description and proposed baseline.

By July 1996, the baseline description will be sufficiently detailed to provide the basis for preparation of the FY97 site budget request with outyear descriptions fully developed at the summary level. Complete network logic diagrams, work breakdown structure, schedules, and cost estimates will be assembled for outyear planning.

By the end of Phase III, the major plans and work activities at the Site will have been aligned for implementation with the recommended alternative. Phase IV implementation of ASAP will focus on aligning the recommended alternative with three major Site planning efforts: (1) the Conceptual Vision for the Site developed during the Workout II session in March 1996; (2) the Integrated Sitewide Baseline (ISB); and (3) SNM stabilization and consolidation plans encompassed by the Site Integrated Stabilization Management Plan (SISMP), and DNFSB Recommendations 94-1 and 94-3. ASAP's anticipated alignment with each of these three program areas is discussed below.

ASAP, the Conceptual Vision, and the National Environmental Policy Act (NEPA) – The Rocky Flats Draft Conceptual Vision and the ASAP are closely related. The draft Conceptual Vision, currently under development, will help guide all actions at the Site including cleanup, SNM consolidation, safety, physical plant conversion and land use. The Vision forms the planning target for Site closure. ASAP will define the implementation strategy to reach the Vision. The data generated during the ASAP process will aid decision makers in the finalization of the Vision and development of the cleanup agreements.

Rocky Flats NEPA activities will bound the alternative recommended for the Site. The Site-Wide Environmental Impact Statement (SWEIS), publication of which is expected in 1997, will incorporate major elements of the various ASAP alternatives. The Conceptual Vision focuses the direction that the Site will pursue and is consistent with the SWEIS analyses for end state scenarios. The record of decision (ROD) will define the preferred action(s). Actions that need to take place prior to the ROD can be treated as interim actions to the SWEIS if they meet the criteria of 40 CFR 1506.1c which requires that the actions are justified independently of the program, are accompanied by an adequate NEPA document, and will not prejudice the ultimate decision on the program.


PHASE I
PHASE II
PHASE III
PHASE IV
August 1996
October 1996
January 1996
September 1996
December 1996
Develop Conceptual Approach
Outline Program Area Options & Comparisons
SNM
Waste Management
Facilities Decommissioning
Interim Closure/ER
Site Infrastructure
Implementation
Issue Phase I Report
Concepts
Technical Logic
Major Issues
Tasks
Develop Alternatives
Refine Implementation Strategy
Stakeholder Input
Identify Risk Parameters & Drivers
Compare Alternatives
Level 0 Program Logics
ROM Cost Estimates
Identify Cost & Schedule Risk Drivers
Identify Cross-Alternatives Information Needs
Refine Data Needs-Adopt Generic Planning Assumptions
Expand Detail Planning For Select Alternatives
Special Studies
Risk Analysis
Complete Level 0/1 Logics, WBS, Schedule, & Cost Estimates
Develop Definitive Cost Account Document (CAD) Planning Basis For FY97
Prepare FY97 Budget & Work Plan
Decision & Analysis Support
Stakeholder Input
Select Recommended Alternative
ASAP Aligned with
Integrated Sitewide Baseline For FY97
Site Conceptual Vision
SW EIS
DNFSB Recommendations
Update WBS, Logic, Schedule, Cost Estimate at CAD Level for FY97-98
Complete Sitewide Baseline

ASAP, the SNM Storage Stabilization and Consolidation Programs 94-1, 94-3, and SISMP – The expectation is that ASAP will not introduce new activities in the stabilization, consolidation, and storage of SNM. ASAP plans for SNM stabilization and consolidation will conform to existing commitments described in the SISMP, and DNFSB Recommendations 94-1 and 94-3. SNM strategy in ASAP is expected to align with the existing SNM programs, and the Site intends to honor DNFSB and DOE commitments.

ASAP and the Integrated Sitewide Baseline (ISB) – Alignment of the ISB, once the recommended alternative is approved for planning purposes, is expected. During the first half of FY96, work is being aligned to a set of DOE-approved performance measures and corresponding work packages that do not preclude the implementation of any of the alternatives.

ASAP will become the basis for sitewide integrated planning and program execution. The emphasis through Phase III will be on detailed studies and selection of a recommended alternative. From September 1996 through December 1996, ASAP Phase IV will concentrate on refinement of planning for FY98 and beyond.

Due to the encompassing site-wide approach taken by the ASAP, Section 5.4, Non-Environmental Regulatory Strategy, and Section 5.5, Project Support Activity Strategy, are incorporated into this section, Site-Wide Action Strategy.

5.4. Non-Environmental Restoration Regulatory Strategy

This section is included in Section 5.3.

5.5. Project Support Activity Strategy

This section is included in Section 5.3.

5.6. Performance Measures

This section is supposed to present Rocky Flats' specific Perfo grouping them into the four strategic measures described in the Strategic Plan:

- Relative Risk Reduction
- Land and Facility Status
- Resource Distribution
- Program Efficiency

Rocky Flats has already developed Performance Measures in the areas of Waste Management, Environmental Restoration, Nuclear Material and Facility Stabilization, Technology Development, Safety and Health, and Trust and Confidence. These Performance Measures are documented in the Environmental Management Fiscal Year Performance Plan which is required by the Government Performance and Results Act (GPRA) pilot project. The Performance Plan is submitted yearly to the Office of Management and Budget. These Performance Measures are also statused quarterly and reviewed with DOE Headquarters.

A summary, by category, of the current Rocky Flats Performance Measures is presented below:

- Waste Management--five measures
  « unit cost for wastes stored
  « unit cost for wastes treated
  « unit cost for wastes disposed of
  « dollars spent on Waste Management
  « dollars spent on Mission Essential Non-Waste Type Specific Work compared to total budget

- Environmental Restoration--five measures
  « annual and cumulative number of completed characterization / assessment phases of projects and the percent of all characterization / assessment activities completed
  « annual and cumulative number of interim actions, removal actions and expedited response actions completed
  « annual and cumulative number of completed final remedial actions, and the percent of all final remedial actions completed
  « annual and cumulative number of completed final decommissioning true subprojects and the percent of all final decommissioning activities completed
  « annual and cumulative number of completed vicinity property final remedial actions, and the percent of all vicinity property final remedial actions completed

- Nuclear Material and Facility Stabilization--four measures
  « accomplish 100% of the Fiscal nuclear material Stabilization commitments and other risk reduction activities
  « accomplish deactivation projects and activities within (or better than) cost and schedule baselines
  « reduce the total number of surveillance and maintenance (S&M) actions and / or S&M costs from previous Fiscal Year levels
  « maintain the cost and schedule performance for all Landlord Line Item Projects within five percent (5%) of performance baselines

- Technology Development--RFETS contributes to the following three DOE Technology Development Summary Program Measures at this time. Specific RFETS Performance Measures will be provided at a later date
  « the number of improved technologies / systems (bench, pilot, full-scale) demonstrated
  « the number of improved technologies / systems available for transfer
  « percentage of Technology Development budget directed to the private sector

- Safety and Health--two measures
  « decrease Occupational Safety & Health Administration (OSHA) recordable injury rate / per 200,000 hours
  « decrease lost workday rate / per 200,000 hours

- Trust and Confidence (Stakeholders)--four measures. RFETS also contributes to results of bi-yearly surveys conducted by the DOE EM's Office of Public Accountability that quantifies changes in the satisfaction levels of Stakeholders nation-wide. The four specific RFETS Performance Measures are:
  « increased feedback from Stakeholders attending EM public meetings, focus groups, advisory board meetings, and other outreach forums

- « progress in establishing Citizen Advisory Boards (CAB) or other Stakeholder forums.
- « feedback received by Stakeholders who participate with our Citizen Advisory Boards
- « feedback received by Stakeholders who participate in the EM Fiscal Year Budget process

In addition to the above Performance Measures, the current integrating contractor earns fee for the successful completion of milestones, referred to as performance measures. There will be approximately 50 of these internal performance measures in the contract for FY 96.

6. Environmental Restoration Program Master Schedule

6.1. Master Restoration Schedule

Two ASAP schedules are presented in this section: one for unrestricted release of the site - Alternative 1, (Figure 6.1-1) and one for mothballing the Site - Alternative 4, (Figure 6.1-2). The Rocky Flats budget is being planned to an ASAP alternative midway between the two extreme scenarios.

6.2. Significant Compliance Milestones

The Draft RFCA, dated March 14, 1996, is out for public comment. When finalized, it will replace the IAG, which is the CERCLA consent order between DOE, EPA, and CDPHE for the environmental cleanup of Rocky Flats. No specific compliance milestones are set for Rocky Flats except for FY96. These are provided in Table 6.2-1. Future FY milestones, which will not be enforceable compliance milestones set forth in the RFCA, will be developed, as needed, based upon future site funding and on risk priorities.

The RFCA also has three broad objectives, which could be classified as compliance milestones. They are summarized below:

1. DOE will stabilize, consolidate, and temporarily store plutonium, other special nuclear material and transuranic wastes on-site for removal; ultimate removal of plutonium is targeted for no later than 2015.

2. Waste management activities for low-level, low-level mixed, hazardous, and solid wastes will include a combination of on-site treatment, storage in a retrievable and monitored manner, disposal, and off-site removal. Low-level and low-level mixed wastes generated during cleanup that remain on-site will be stored temporarily pending shipment off-site, stored for a longer term in a retrievable and monitored manner, or disposed on-site.

3. At the completion of cleanup activities, all surface water on-site and all surface and groundwater leaving the Site will be of acceptable quality for all uses.

Figure 6.1-1 ASAP Schedule Unrestricted Alternative - Level 1 Schedule
(This figure was not submitted)

Figure 6.1-1 Continued

(This figure was not submitted)

Figure 6.1-1 Continued

(This figure was not submitted)

Figure 6.1-2 Alternative 4, Mothball - Level 1 Schedule
(This figure was not submitted)

Figure 6.1-2 Continued

(This figure was not submitted)

Figure 6.1-2 Continued

(This figure was not submitted)

Table 6.2-1 ER/WM Milestones for FY 96

Specific Milestone	Action	Date
Completion of Source Material Excavation	Accelerated Action at Trench T-3 in OU-2	July 30, 1996
Completion of Source Material Excavation	Accelerated Action at Trench T-4 in OU2	July 30, 1996
Completion of Tank Cleaning and Foaming	Accelerated Actions on IAG tanks on the Industrial Area	September 30, 1996
Completion of 2nd megashipment for offsite disposal	Shipment of Saltcrete for Offsite Disposal	September 30, 1996
Removal of stored waste and drummed solid residues from Building 779	Evacuation of Stored Waste and Solid Residue from Building 779	September 30, 1996
Treatment or disposal of 48 reactive chemicals	Reactive Disposition September 30, 1996	September 30, 1996

ER MILESTONES FOR FY96

1. Accelerated Action at Trench T-3 in OU-2

Trench T-3 is believed to be a potential source of volatile organic compound (VOC) and radionuclide contamination to groundwater. The accelerated action is a source removal. The action consists of excavating approximately 2240 cubic yards of source material from the trench, treating material using thermal desorption technology, placing processed soils back into the trenches (if appropriate), and adding clean soil (if needed) to return the terrain to its pre-excavation condition.

MILESTONE	DATE
Completion of Source Material Excavation	July 30, 1996

2. Accelerated Action at Trench T-4 in OU2

Trench T-4 is believed to be a potential source of VOC and radionuclide contamination to groundwater. The accelerated action is a source removal. The action consists of excavating approximately 2240 cubic yards of source material from the trench, treating material using thermal desorption technology, placing processed soils back into the trenches (if appropriate), and adding clean soil (if needed) to return the terrain to its pre-excavation condition.

MILESTONE	DATE
Completion of Source Material Excavation	September 30, 1996

3. Accelerated Actions on IAG tanks on the Industrial Area

Accelerated actions will be completed at six Interagency Agreement (IAG) tanks in four Industrial Area Operable Units (OUs) (OU8, OU9, OU10, and OU13). The actions will consist of removal of the tanks' contents, rinsing the tanks, and filling the tanks with closed-cell foam for closure in place. All source materials in the tanks will be removed and treated using onsite treatment facilities.

MILESTONE	DATE
Completion of Tank Cleaning and Foaming	September 30, 1996

WM MILESTONES FOR FY96

1. Shipment of Saltcrete for Offsite Disposal

Saltcrete is disposed of offsite at Envirocare in Utah as low-level, mixed waste. This action consists of shipping "megashipments" of saltcrete for disposal offsite at a RCRA-permitted location. One megashipment of saltcrete (about 8400 cubic feet) has been transported to Envirocare in FY96 (December, 1995).

MILESTONE	DATE
Completion of 2nd megashipment for offsite disposal	September 30, 1996

2. Evacuation of Stored Waste and Solid Residue from Building 779

Building 779 has been targeted for deactivation in preparation for building demolition. Removal of drummed stored residue waste from the building is one of many activities needed to allow deactivation of the building and revision of the building authorization basis. This action consists of removal of the stored waste and drummed solid residues in the building, excluding SNM.

MILESTONE	DATE
Removal of stored waste and drummed solid residues from Building 779	September 30, 1996

3. Reactive Disposition

Some chemicals identified onsite and listed in the Excess Chemical Program are classified as Priority 1 Reactive Chemicals. This action consists of onsite treatment or offsite treatment/disposal of reactive chemicals. Treatment by UV, hydrolysis, dissolution, or other method will be used to render some target chemicals nonreactive. Shipment of other non-radioactive, reactive chemicals will be made to offsite, RCRA-permitted treatment/disposal facilities. Forty-eight Priority 1 Reactive Chemicals have been identified onsite.

MILESTONE	DATE
Treatment or disposal of 48 reactive chemicals	September 30, 1996

7. Technical and Other Issues To Be Resolved

7.1. Key Issues Affecting ASAP Project

Some of the key issues to be resolved in subsequent planning phases of the project include the following:

- Considering the logical array of alternatives that address most stakeholder concerns and determining aggregate stakeholder priorities.
- Evaluating methods to expedite plutonium and waste shipment from the Site.
- Achieving a fundable alternative. It is not clear that the current alternative, even with its dramatic cost and schedule savings, will be funded in preference to a longer duration project.
- Achieving consensus on the strategies for plutonium and waste storage and facility decommissioning.
- Determining the level of plutonium and waste processing, consistent with national interests, that should be done before the materials are placed in potentially long-term storage.
- Establishing the prudent planning horizon for the possibility of long-term storage of plutonium and waste.
- Determining the optimum remediation or stabilization strategy for soil and groundwater to identify the cost-benefit tradeoffs.
- Determining the appropriate authorization basis and safety controls necessary to balance safety and efficiency in proceeding with plutonium, waste, and decommissioning activities.

Some issues for further consideration include

- On-site storage / disposal of all waste types.
- Treatment criteria for long-term storage or disposal for all waste types and regulatory alignment with criteria.
- Lower-cost options for storing TRU waste than in a hardened facility.
- Economic development.
- Future mission.

7.2. Initiatives Implemented to Improve Project Performance

[To be provided by John Schneider]

Items Still forthcoming (Expected Delivery Date - 5/6/96)

Glossary
Bibliography
Chapter References
Section 1.1 Insert
Section 7.2 Insert

APPENDIX A:

FISCAL YEAR FUNDING REQUIREMENTS / COSTS

Table A-1. Prioritization - FY97 & 98 Budget Data Summary, provides the summary with associated Basic Operations and Essential Services (BOES) costs and Discretionary Costs for FY97 and FY98. The Cumulative Total column is additive from the BOES cost for FY98.

Although in the WBS ranking, each Level 4 WBS element was initially ranked at a High, Medium, or Low category, in the final prioritization, the WBS elements were presented in a numerical prioritization. This methodology was set up to respond to available funding. The highest priority item (lowest priority rank) will be funded first, and so on. From Table A-1, Cumulative Total Column, it is a straight-forward determination to identify what is funded and what is not.

Prioritization - FY 97 & 98 Budget Data Summary

						97			98		
WBS Chron-ology	WBS Number	WBS Work Element Title	Priority Rank	ADS Designation	Task Document	BOES*	Discre-tionary Cost		BOES*	Discre-tionary Cost	Cumulative Total ($397,906)
24	1.1.4.9	Develop SNM Stabilization Capability Projects	1								
		• Develop Pu Prototype Processing and Packaging		NM99	1.1.4.9.1	0	16910		0	0	397906
		• Develop Process for Accountability and Safe Storage (PASS) Project		RF6757	1.1.4.9.2	0	10950		0	6650	404556
		• Develop SNM Solid Residue Elimination Project		RF6723	1.1.4.9.3	28630	0		5387	0	404556
72	1.1.6.14	Remove 779 Cluster	2	RF116	1.1.6.14	4624	4830		4555	7144	411700
25	1.1.4.10	Operate and Maintain SNM Treatment and Packaging Processes	3	RF114NM	1.1.4.10	53354	0		67810	0	411700
23	1.1.4.8	Develop, Operate and Maintain Pu Storage Facility	4								
		• Upgrade Existing Pu Storage Facilities		RF114A	1.1.4.8.1	2300	0		8500	0	411700
		• Develop and Implement New Pu Storage Facility		RF114B	1.1.4.8.3	0	12460		0	22950	434650
60	1.1.6.2	Remove 371/374 Cluster	5	RF116	1.1.6.2	26151	0		25758	0	434650
68	1.1.6.10	Remove 771/774 Cluster	6	RF116	1.1.6.10	19135	0		4713	12794	447444
70	1.1.6.12	Remove 776/777 Cluster	7	RF116	1.1.6.12	12255	2075		11466	17543	464987
73	1.1.6.15	Remove 790 Cluster	8	RF116	1.1.6.15	82	0		80	0	464987
19	1.1.4.4	Develop, Operate & Maintain TRU/TRUM Waste Storage Facilities	9								
		• Operate and Maintain Site TRU/TRUM Storage Facility		RF114WM	1.1.4.4.1	519	0		587	0	464987
		• Develop and Implement New TRU/TRUM Waste Storage Facility		RF114WMA	1.1.4.4.2	0	8526		0	8399	473386
62	1.1.6.4	Remove 559 Cluster	10	RF116	1.1.6.4	7973	0		7854	0	473386
88	1.1.6.30	Develop Nuclear Production Zone Projects	11								
		• Air Monitoring Improvement Project		RF6754	1.1.6.30.1	99	0		0	0	473386
		• MSSA Project		RF6757	1.1.6.30.2	0	1090		0	2190	475576
		• HP/EP Representative Effluent Sampling Project		RF6749	1.1.6.30.3	80	0		0	0	475576
		• Safeguards and Security Modification Project			1.1.6.30.4	275	0		0	0	475576
		• Provide SNM Capital Equipment		NM99	1.1.6.30.6.1	0	2065		0	2700	478276
		• Provide Waste Capital Equipment		WM99	1.1.6.30.6.2	0	2100		0	2100	480376
		• Provide SNM GPP		NM99	1.1.6.30.7.1	0	5120		0	5600	485976
		• Provide Waste GPP		WM99	1.1.6.30.7.2	0	3500		0	1285	487261
55	1.1.5.28	Remove INFSTM Cluster	12	RF115	1.1.5.28	516	0		508	0	487261
18	1.1.4.3	Develop, Operate & Maintain LLW and LLMW Storage Facilities	13								
		• Operate and Maintain Site LLW/LLMW Storage Facility		RF114WM	1.1.4.3.1	9851	0		0	0	487261
		• Develop and Implement New LLW/LLMW Storage Facility		RF114WMB	1.1.4.3.2	0	72755		0	30543	517804
		• Operate and Maintain New LLW/LLMW Storage Facility		RF114WM	1.1.4.3.3	0	0		10756	0	517804
		• Assay and Characterize LL/LLM Waste		RF114WM	1.1.4.3.4	0	2132		0	2117	519921
21	1.1.4.6	Operate & Maintain Waste Treatment Processes	14	RF114WM	1.1.4.6	10032	0		9881	0	519921
84	1.1.6.26	Remove INFELN Cluster	15	RF116	1.1.6.26	38	0		38	0	519921
90	1.1.7.2	Provide Site Infrastructure Services and Projects	16								
		• Operate Security and Safeguards		RF117	1.1.7.2.1	30669	0		30210	0	519921
		• Operate Food Service		RF117	1.1.7.2.2	0	983		0	969	520890
		• Provide Medical Services/Health Surveillance		RF117	1.1.7.2.4	2788	0		2746	0	520890
		• Provide Emergency Preparedness		RF117	1.1.7.2.5	533	0		525	0	520890
		• Provide Shipping and Receiving		RF117	1.1.7.2.6	13119	0		12922	0	520890
		• Operate Fire Department		RF117	1.1.7.2.8	3854	0		3796	0	520890
		• Operate Laundry		RF117	1.1.7.2.9	1476	0		1453	0	520890
		• Provide Filter Test and Changeout Support		RF117	1.1.7.2.11	1968	0		1939	0	520890
		• Operate Broomfield Warehouse		RF117	1.1.7.2.12	0	696		0	687	521577
		• Operate Analytical Labs		RF117	1.1.7.2.14	16398	0		16153	0	521577
		• Provide Infrastructure Capital Equipment		INF99	1.1.7.2.15	0	3090		0	3750	525327
		• Provide Site Support GPP		INF99	1.1.7.2.16	0	7250		0	7100	532427
		• Critical Alarms and Plant Ann. Sys. (CAPASU) Project		RF6756	1.1.7.2.17a	0	1850		0	6850	539277
		• Plant Fire/Security System Replacement		RF6755	1.1.7.2.17d	0	6600		0	17500	556777
		• Underground Storage Tanks Project		RF6748	1.1.7.2.17f	250	0		0	0	556777
		• Sitewide Roof Repairs Project		NM99	1.1.7.2.17h	0	0		0	600	557377
		• Road Repairs Project		NM99	1.1.7.2.17i	0	0		0	700	558077
49	1.1.5.22	Remove INFGAS Cluster	17	RF115	1.1.5.22	6	0		6	0	558077
89	1.1.7.1	Provide Utility Services and Projects	18								
		• Operate Water Utility		RF117	1.1.7.1.1	726	0		715	0	558077
		• Domestic/Fire Water Upgrade Project		RF6760	1.1.7.1.1.10	0	700		0	1350	559427
		• Provide Telecommunications & Computing Project		RF117	1.1.7.1.2	9019	0		8884	0	559427
		• Operate Nitrogen Plant and Supply		RF117	1.1.7.1.3	600	0		600	0	559427
		• Operate Steam Plant		RF117	1.1.7.1.4	1410	0		1390	0	559427
		• Provide Natural Gas Supply		RF117	1.1.7.1.5	630	0		1252	0	559427
		• Provide Electrical Plant Power		RF117	1.1.7.1.6	1231	0		1212	0	559427
		• Substation Project		RF6751	1.1.7.1.6.10	2450	0		0	0	559427
		• Operate Sanitary Waste Collection Treatment and Storage		RF117	1.1.7.1.7	1557	0		1535	0	559427
		• Sewage Treatment Plant (STP) Upgrade Project		RF3827	1.1.7.1.7.10	330	0		250	0	559427
39	1.1.5.12	Remove 664 Cluster	19	RF115	1.1.5.12	547	0		539	0	559427
65	1.1.6.7	Remove 707 Cluster	20	RF116	1.1.6.7	20650	0		20340	499	559926
48	1.1.5.21	Remove INFELI Cluster	21	RF115	1.1.5.21	70	0		69	0	559926
54	1.1.5.27	Remove INFSEW Cluster	22	RF115	1.1.5.27	61	0		59	0	559926
83	1.1.6.25	Remove SECNPZ Cluster	23	RF116	1.1.6.25	642	0		632	0	559926
82	1.1.6.24	Remove PWTSN Cluster	24	RF116	1.1.6.24	237	0		234	0	559926
20	1.1.4.5	Provide Offsite Waste Disposal	25	RF114WM	1.1.4.5	3494	0		9888	0	559926

Prioritization - FY 97 & 98 Budget Data Summary

						97			98		
WBS Chron-ology	WBS Number	WBS Work Element Title	Priority Rank	ADS Designation	Task Document	BOES*	Discre-tionary Cost		BOES*	Discre-tionary Cost	Cumulative Total ($397,906)
51	1.1.5.24	Remove INFWTI Cluster	26	RF115	1.1.5.24	249	0		244	0	559926
85	1.1.6.27	Remove INFWTN Cluster	27	RF116	1.1.6.27	16	0		16	0	559926
26	1.1.4.11	Provide SNM Offsite Shipment	28	RF114NM	1.1.4.11	0	2185		0	2153	562079
64	1.1.6.6	Remove 569 Cluster	29	RF116	1.1.6.6	99	0		99	0	562079
50	1.1.5.23	Remove H2OGIZ Cluster	30	RF115	1.1.5.2.3	229	0		226		562079
57	1.1.5.30	Remediate / Contain Industrial Zone High Risk IHSS Cluster	31		1.1.5.30						562079
86	1.1.6.28	Remediate / Contain Nuclear Production Zone High Risk IHSS Cluster	32		1.1.6.28						562079
16	1.1.4.1	Operate & Close 219 Cluster Landfill (OU 7)	33	RF114WM	1.1.4.1	315	0		257	0	562079
95	1.1.8.5	Provide RFFO Direction and Support	34								
		• RFFO Program Direction		RFPD	n / a	44243	0		23000	22000	584079
		• RFFO Support Costs		RF118	n / a	35000	0		18000	17000	601079
75	1.1.6.17	Remove 881 Cluster	35	RF116	1.1.6.17	3260	0		3211	0	601079
92	1.1.8.2	Operate General & Administrative Support Services	36		1.1.8.2						601079
91	1.1.8.1	Provide Management	37		1.1.8.1						601079
41	1.1.5.14	Remove 750HAZ Cluster	38	RF115	1.1.5.14	163	0		161	0	601079
44	1.1.5.17	Remove 903 / 905 Cluster	39	RF115	1.1.5.17	2309	0		2275	0	601079
45	1.1.5.18	Remove 904 / 906 Cluster	40	RF115	1.1.5.18	1337	0		1316	0	601079
67	1.1.6.9	Remove 750Pad Cluster	41	RF116	1.1.6.9	968	0		952	0	601079
76	1.1.6.18	Remove 865 / 883 Cluster	42	RF116	1.1.6.18	1594	0		1570	0	601079
56	1.1.5.29	Remove INFFCM Cluster	43	RF115	1.1.5.29	533	0		525	0	601079
77	1.1.6.19	Remove 886 Cluster	44	RF116	1.1.6.19	3668	0		3612	6847	607926
37	1.1.5.10	Remove 444 Cluster	45	RF115	1.1.5.10	2338	0		2303	0	607926
13	1.1.3.9	Remediate / Contain Inner Buffer Zone High Risk IHSS Cluster	46	RF113	1.1.3.9	0	6304		0	14721	622647
52	1.1.5.25	Remove PWTS Cluster	47	RF115	1.1.5.25	391	0		385	0	622647
53	1.1.5.26	Remove INFRDS Cluster	48	RF115	1.1.5.26	74	0		72	0	622647
93	1.1.8.3	Provide General Technical Support Services	49	RF118	1.1.8.3	20701	0		9234	9234	631881
47	1.1.5.20	Remove SECIZ Cluster	50	RF115	1.1.5.20	348	0		343	0	631881
81	1.1.6.23	Remove 991 Cluster	51	RF116	1.1.6.23	318	91		315	0	631881
63	1.1.6.5	Remove 566 Cluster	52	RF116	1.1.6.5	193	0		190	0	631881
9	1.1.3.5	Remove SECBZI Cluster	53	RF113	1.1.3.5	3	0		3	0	631881
78	1.1.6.20	Remove 910 Cluster	54	RF116	1.1.6.20	243	0		240	0	631881
58	1.1.5.31	No-Action / No-Further Action Justification for Industrial Zone Low Risk IHSS Cluster	55	RF116	1.1.5.31	0	0		0	0	631881
79	1.1.6.21	Remove 964 Cluster	56	RF116	1.1.6.21	78	0		78	0	631881
32	1.1.5.5	Remove 300 / 500 Cluster	57	RF115	1.1.5.5	1603	0		1579	0	631881
42	1.1.5.15	Remove 850 Cluster	58	RF115	1.1.5.15	547	0		539	0	631881
33	1.1.5.6	Remove 331 Cluster	59	RF115	1.1.5.6	463	0		456	0	631881
71	1.1.6.13	Remove 778 Cluster	60	RF116	1.1.6.13	1	0		1	0	631881
12	1.1.3.8	Develop & Implement Groundwater Management System	61	RF113	1.1.3.8	0	0		0	0	631881
31	1.1.5.4	Remove 223 Cluster	62	RF115	1.1.5.4	244	0		240	0	631881
43	1.1.5.16	Remove 891T Cluster	63	RF115	1.1.5.16	767	0		755	0	631881
80	1.1.6.22	Remove 980 Cluster	64	RF116	1.1.6.22	362	0		357	0	631881
74	1.1.6.16	Remove 800A Cluster	65	RF116	1.1.6.16	681	0		676	0	631881
66	1.1.6.8	Remove 750 Cluster	66	RF116	1.1.6.8	911	0		904	0	631881
6	1.1.3.2	Remove H2OGBZ Cluster	67	RF113	1.1.3.2	92	0		90	0	631881
8	1.1.3.4	Remove H2OSIZ Cluster	68	RF113	1.1.3.4	3	0		3	0	631881
7	1.1.3.3	Remove H2OSBZ Cluster	69	RF113	1.1.3.3	44	0		44	0	631881
3	1.1.1.4	No-Action / No-Further Action Justification for Outer Buffer Zone Low Risk IHSS Cluster	70	RF111	1.1.1.4	0	0		0	0	631881
40	1.1.5.13	Remove 690T Cluster	71	RF115	1.1.5.13	634	0		624	0	631881
61	1.1.6.3	Remove 371A Cluster	72	RF116	1.1.6.3	115	0		114	0	631881
94	1.1.8.4	Provide Programmatic Technical Support Services	73								
		• Provide Environmental Compliance and Protection Technical Support		RF118	1.1.8.4.1	6963	0		3105	3104	634985
		• Provide Environmental Monitoring Services		RF118	1.1.8.4.2	22547	0		11309	11309	646294
		• Provide Programmatic Technology Integration & Development Services		RF118	1.1.8.4.3	6111	0		3034	3033	649327
		• Provide Waste Management Technical Support		RF118	1.1.8.4.4	14895	0		7625	7625	656952
		• Provide Environmental Restoration Technical Support		RF118	1.1.8.4.5	5081	0		2598	2597	659549
		• Provide Special Materials and Residues Technical Support		RF118	1.1.8.4.6	4775	0		1600	1600	661149
		• Provide Economic Conversion Support		RF118	1.1.8.4.7	0	0		0	0	661149
		• Disposition Excess Property and Material		RF118	1.1.8.4.8	0	2984		0	3052	664201
		• Provide Engineering Project & Construction Support Services		RF118	1.1.8.4.9	10068	0		4976	4976	669177
		• Provide Site Operations Support Services		RF118	1.1.8.4.10	8526	0		4360	4360	673537
4	1.1.2.1	No-Action / No-Further Action Justification for Contaminated Buffer Zone	74	RF112	1.1.2.1	0	0		0	0	673537
87	1.1.6.29	No-Action / No-Further Action Justification for Nuclear Production Zone Low Risk IHSS Cluster	75	RF116	1.1.6.29	0	0		0	0	673537
59	1.1.6.1	Remove 207 Cluster	76	RF116	1.1.6.1	713	0		703	0	673537
10	1.1.3.6	Operate Ponds and Develop & Implement Surface Water Conversion Project (Flow Through System)	77	RF113	1.1.3.6	0	1088		0	1072	674609
30	1.1.5.3	Remove 221 / 224 Cluster	78	RF115	1.1.5.3	159	0		158	0	674609
35	1.1.5.8	Remove 440 Cluster	79	RF115	1.1.5.8	0	53		0	1246	675855
69	1.1.6.11	Remove 771A Cluster	80	RF116	1.1.6.11	234	0		0	23	675878
14	1.1.3.10	No-Action / No-Further Action Justification For Inner Buffer Zone Low Risk IHSS Cluster	81	RF113	1.1.3.10	0	0		0	0	675878
36	1.1.5.9	Remove 442 / 452 Cluster	82	RF115	1.1.5.9	0	141		0	580	676458
29	1.1.5.2	Remove 125 / 441 Cluster	83	RF115	1.1.5.2	810	0		797	0	676458

Prioritization - FY 97 & 98 Budget Data Summary

						97			98		
WBS Chron-ology	WBS Number	WBS Work Element Title	Priority Rank	ADS Designation	Task Document	BOES*	Discre-tionary Cost		BOES*	Discre-tionary Cost	Cumulative Total ($397,906)
22	1.1.4.7	Develop Waste Management Projects	84								
		• Alternative Liquid Waste Treatment Facility Project		RF3829	1.1.4.7.1	0	0		0	6516	682974
		• CTMP Immobilization of Misc. Waste Project		RF3831	1.1.4.7.2	0	1700		0	1500	684474
		• CTMP Organic Treatment Project		RF3832	1.1.4.7.3	0	900		0	1300	685774
27	1.1.4.12	Develop & Construct New Closure Cap(s)	85	RF114WMC	1.1.4.12	0	0		0	0	685774
11	1.1.3.7	Develop & Implement Wetlands Conversion Project	86	RF113	1.1.3.7	0	0		0	0	685774
46	1.1.5.19	Remove AIRMON Cluster	87	RF115	1.1.5.19	4	0		4	0	685774
1	1.1.1.1	Remove SECBZO Cluster	88	RF111	1.1.1.1	61	0		61	0	685774
38	1.1.5.11	Remove 460 Cluster	89	RF115	1.1.5.11	2338	0		2303	0	685774
2	1.1.1.2	Remove INFMT Cluster	90	RF111	1.1.1.2	1	0		1	0	685774
5	1.1.3.1	Remove 130 Cluster	91	RF113	1.1.3.1	3150	0		3104	0	685774
15	1.1.3.11	Close Old Sanitary Landfill (OU 5)	92	RF113	1.1.3.11	0	0		0	0	685774
34	1.1.5.7	Remove 371T Cluster	93	RF115	1.1.5.7	291	0		286	0	685774
28	1.1.5.1	Remove 111 Cluster	94	RF115	1.1.5.1	1657	0		1631	0	685774
17	1.1.4.2	Develop, Operate & Close New Sanitary Landfill	95	RF114WM	1.1.4.2	0	0		0	0	685774
					Totals	504150	181128		397906	287868	

* Basic Operations and Essential Services

Title	Date Completed	Phase	Applicable Activities	Point Of Contact
Final CAD/ROD 1995	6/18/09	NFA without remediation	OU16	Bob Birk
Final CMS/FS Report	2/13/95	study	OU1	Dave George
Draft Proposed Plan	Fall 1995	cleanup	OU1	Dave George
Final Phase III RFI/RI Report	11/5/93	study	OU1	Scott Grace
Final Phase 1 RFI/RI Report	6/8/95	study	OU11	Dave George
Final Phase II CAD/FAD	9/21/95	NFA without remediation	OU11	Dave George
Final Phase II Proposed Plan	6/13/95	NFA without remediation	OU11	Dave George
Final Phase 1 RFI/RI Report	12/16/94	study	OU15	Bill Fitch
Final CAD/ROD	9/21/95	NFA without remediation	OU15	Bill Fitch
Draft Phase II RFI/RI Report	5/24/95	study	OU2	Bill Fitch
Final Phase II RFI/RI Report	10/23/95	study	OU2	Bill Fitch
Draft Phase 1 RFI/RI Report	10/19/95	study	OU3	Bob Birk
Draft Proposed Plan	1/1/96	NFA without remediation	OU3	Dave George
Final Phase I RFI/RI Report	9/30/93	study	OU4	Regina Sarter
Final Phase II RFI/RI Work Plan	9/2/94	cleanup	OU4	Regina Sarter
Phase 1 Proposed IM/IRA Decision Document	2/1/95	cleanup	OU4	Regina Sarter
Draft Phase 1 RFI/RI Report	10/19/95	study	OU5	Kurt Muenchow
Draft Phase 1 RFI/RI Report	9/28/95	study	OU6	Kurt Muenchow
Draft Final Phase I RFI/RI Work Plan	8/28/91	study	OU7	Bob Birk
Final Revised Phase 1 RFI/RI Work Plan TM	9/8/94	study	OU7	Peg Witherill
Revised Potential Action Memorandum (PAM)	6/15/95	interim response action	OU7	Peg Witherill
Final Phase 1 IM/IRA Decision Document	4/1/96	cleanup	OU7	Peg Witherill
Revised Background Study Report	12/21/90	study	Site-wide	
Final Community Survey Plan	3/22/90	study	Site-wide	
Final Community Relations Plan	1/22/91	study	Site-wide	
Final Historical Release Report	6/3/92	study	Site-wide	
Final Health and Safety Plan	11/12/90	study	Site-wide	
Final Plan for Prevention of Contaminant Dispersion	2/21/91	study	Site-wide	
Final Work Plan for Discharge Limits for Radionuclides	8/13/91	study	Site-wide	
Final Quality Assurance Project Plan	2/1/91	study	Site-wide	
Final Standard Operating Procedures, Vol. 1 - Field Operations, Vol. 2 - Groundwater, Vol. 3 - Geotechnical	2/1/91	study	Site-wide	
Final Standard Operating Procedures, Vol. 4 - Surface Water, Vol. 5 - Ecology	1/25/91	study	Site-wide	
Final Standard Operating Procedures, Vol. 6 - Air	2/1/91	study	Site-wide	
Final Treatability Study Plan	2/25/91	study	Site-wide	
Final Treatability Study Report	10/20/93	study	Site-wide	
Deliverables from 1989 – Present **Expected Deliverables from Execution Year**				
Revised Pond Water Management IM/IRA Decision Document	00/00/00	cleanup	Buffer Zone	Dave George
Draft CAD/ROD	00/00/00	cleanup	OU1	Dave George
Final CAD/ROD	00/00/00	cleanup	OU1	Dave George
Draft CMS/FS Report	00/00/00	study	OU2	Dave George
Final CMS/FS Report	00/00/00	study	OU2	Dave George
Draft Proposed Plan	00/00/00	cleanup	OU2	Dave George
Final Proposed Plan	00/00/00	cleanup	OU2	Dave George
Draft CAD/ROD	00/00/00	cleanup	OU2	Dave George
Final CAD/ROD	00/00/00	cleanup	OU2	Dave George
CAD/ROD Work Plan	00/00/00	cleanup	OU2	Dave George
Final Phase 1 RFI/RI Report	7/11/96	study	OU3	Dave George
Final Phase 1 IM/IRA Decision Document	00/00/00	cleanup	OU4	Dave George
Draft Phase II RFI/RI Report	00/00/00	study	OU4	George
Final Phase II RFI/RI Report	00/00/00	study	OU4	Dave George
Draft Phase II CMS/FS Report	00/00/00	study	OU4	Dave George
Final Phase II CMS/FS Report	00/00/00	study	OU4	Dave George
Draft Phase II Proposed Plan	00/00/00	cleanup	OU4	Dave George
Final Phase II Proposed Plan	00/00/00	cleanup	OU4	Dave George
Draft Phase II CAD/FAD	00/00/00	cleanup	OU4	Dave George
Final Phase II CAD/FAD	00/00/00	cleanup	OU4	Dave George
CAD/ROD Work Plan	00/00/00	cleanup	OU4	Dave George
CAD/ROD Work Plan	00/00/00	cleanup	OU5	Dave George
Final Phase 1 RFI/RI Report	00/00/00	study	OU5	Dave George
Final Phase 1 RFI/RI Report	00/00/00	study	OU6	Dave George
Final Phase 1 Proposed IM/IRA Decision Document / Draft Final Phase 1 IM/IRA Decision Document	1/5/96	cleanup	OU7	Dave George
Final Phase 1 IM/IRA Decision Document	00/00/00	cleanup	OU7	Dave George
Draft Phase II CAD/FAD / Draft Phase II CAD/ROD	00/00/00	NFA with remediation	OU7	Dave George
Final Phase II CAD/FAD / Final Phase II CAD/ROD	00/00/00	NFA with remediation	OU7	Dave George

APPENDIX B

HISTORIC DELIVERABLES

Although this MAP Document encompasses the entire Rocky Flats Site activities, Appendix B only provides the Environmental Restoration (ER) deliverables. This is due to the apparent intent of Appendix B, which is to identify those CERCLA-related documents which have been or still are required by consent order to be prepared for ER activities at Rocky Flats. Table B-1 lists the documents from 1989 to the present and from the present to the completion of ER activities.

APPENDIX C

DECISION DOCUMENT/ROD SUMMARIES

Appendix C provides a list of all Decision Documents (DD) or Record of Decision (ROD) documents that have been prepared for Rocky Flats ER activities. The latest revision is provided, draft or final.

OU1 - Final Proposed Interim Measure/Interim Remedial Action (IM/IRA) Decision Document - 1990 - involved the construction of a French drain to intercept and contain groundwater contaminated with organic compounds.

OU1 - Proposed Action Memorandum (PAM) - 1994 - Radioactive hot spot soil removal.

OU1 - Draft Proposed Plan - 1995 - source removal of soil due to organic and radionuclide contamination.

OU1/OU2 - IM/IRA DD - 1995 - groundwater treatment consolidation.

OU2 - Walnut Creek Surface Water IM/IRA DD - 1992 - collection and treatment of seep water from three surface water seeps into Walnut Creek. Reduced to one seep collection in 1994.

OU2 - Subsurface IM/IRA DD - 1992 - soil vapor extraction of subsurface organic contamination. Ceased in 1995 due to limited ability to remediate subsurface soils in a timely manner.

OU2 - PAM - 1995 - Organic-contaminated soil (source) removal from Trench T-2.

OU2 - PAM - 1995 - Organic-contaminated soil (source) removal from Trenches T-3 and T-4.

OU3 - Draft Proposed Plan - 1996 - No Further Action (NFA).

OU4 - Phase I Proposed IM/IRA DD - 1995 - removal of two buildings adjacent to surface impoundments; completion of sludge removal; design and build engineered barrier for sludge disposal. Although sludge removal and building removal has occurred, no further action has been taken on completion of the land disposal unit at this time.

OU 7 - Final Phase I IM/IRA DD - 1996 - presumptive remedy for landfill closure; includes passive gas collection, landfill gas and groundwater monitoring wells, RCRA-type landfill cap. This IM/IRA will be followed by a NFA ROD.

OU11 - Final NFA Corrective Action Document (CAD)/ROD - 1995

OU15 - Final NFA CAD/ROD - 1995

OU16 - Final NFA CAD/ROD - 1995

Industrial Area - IM/IRA DD - 1992 - set up groundwater monitoring system until completion of D&D activities.

APPENDIX D

CONCEPTUAL MODEL DATA SUMMARIES

No conceptual model data summaries are provided for this MAP Document. The conceptual models were to have been developed for high relative risk release sites, zones, operable units, or other waste area units. Appendix F describes the risk approach taken for ER sites at Rocky Flats, but, as is explained in Section 4, this document has shown that ER sites at Rocky Flats have a low priority. Instead plutonium and other SNM disposition has the high relative priority.

APPENDIX E

PROJECT CONTROLS [TBD]

APPENDIX F

PRIORITIZATION OF ENVIRONMENTAL RESTORATION (ER) SITES

A prioritized list of Environmental Restoration (ER) sites was developed to select the top priority sites for remediation. This prioritization may accelerate the cleanup process, which will more quickly reduce risks to human health and the environment. The prioritization of cleanup targets should also result in a reduction of costs associated with cleanup by allowing better planning, and more efficient utilization of resources.

A previous ER risk prioritization system ("Process for Determining the Remediation Category Of IHSSs", prepared for EG&G Rocky Flats by ICF Kaiser Engineers, March 1994) was extensively revised to include risk and cost data. The methodology for generating this prioritized list is provided below, and was developed by a working group composed of EPA, CDPHE, DOE RFFO, Kaiser-Hill, and RMRS staff. The methodology was implemented by RMRS staff and resulted in a prioritized list of ER sites, as well as identifying and ranking sites that require more information.

The list will be updated annually, or as significant new information becomes available. With the consensus of all parties, the priority of any ER site can be changed prior to updating the list, if additional information clearly indicates a need. The list should continue to be evaluated as data becomes available, and should also be verified by field checked and other processes to corroborate these rankings.

METHODOLOGY

General

The ER prioritization was completed using two separate evaluations:

- A screening level risk assessment including PPRG ratios, mobility and potential for further release
- Evaluation of secondary criteria including safety, waste, cost and schedule estimates.

To generate a screening level risk evaluation, analytical data were compared against background values and the appropriate specific programmatic preliminary remediation goals (PPRGs). The ratio of the analytical value to the PPRG is an estimate of associated risk, with a ratio of 100 in a given media approximating a risk of 10^{-4}. These PPRG scores were combined with the mobility and potential for further release scores to calculate the final risk score.

Mobility and potential for further release are important factors in the calculation of the prioritization because a mobile chemical near surface water, near a building, or on a steep slope is far more likely to be transported offsite or impact human health than an immobile contaminant located away from these areas. Continued environmental degradation and increasing risk to the environment and/or human health is caused by continued release of contaminants.

Data evaluation

More than 800 megabytes of Rocky Flats Environmental Data System (RFEDS) analytical data for three media were evaluated; surface soils, subsurface soils, and groundwater. The analytical data were extracted, then compiled into data sets by media and analytical suite. The analytical data by media were compared against the chemical-specific background data, and chemical-specific PPRGs. PPRGS are risk based numbers derived using specific exposure scenarios. The specific exposure scenario basis on which the PPRGs were derived are shown below by media:

Media and Location	**PPRG Set Used for Comparison**
Sitewide groundwater	Open-space surface water
Sitewide subsurface soil	Construction worker subsurface soil
Industrial Area surface soil	Office worker soil
Buffer Zone surface soil	Open-space soil/sediment

Sitewide groundwater data for 1990 to 1995 were screened against background values presented in the 1993 Background Geochemical Characterization Report. There is no exposure pathway to groundwater under the current land use guidance. Groundwater data were assessed against surface water PPRGs to represent the most conservative risk by assuming that groundwater directly contacts a receptor as it daylights to surface water. Degradation was not taken into account and modeling was not performed to determine if this exposure were likely.

All subsurface soil data available for all years were used. These were compared against subsurface soil background values and PPRGs for the construction worker as the most likely receptor.

All surface soil data for all years was used. These were compared against surface soil background values. Two sets of PPRGs were used for this comparison, depending on the sample location, and the most likely exposure pathway for that location. Within the fence surrounding the Industrial Area, the surface soil data were compared to office worker PPRGs. Outside of the fence in the Buffer Zone, the surface soil data were compared to open-space PPRGs.

Assignment to Environmental Restoration Sites

All exceedances of PPRGs were tabulated for groundwater, subsurface soils, and surface soils at each unique sampling location. These sampling locations were plotted on maps using available survey information. Where no survey data were available, approximate locations were calculated using work plan maps. Using this approach, 96% of the sample locations exceeding PPRGs were plotted on maps.

The sample locations that exceeded PPRGs were assigned to areas, IHSSs or groups of IHSSs based on the media and location of the exceedance, and the chemical nature of the analytes. The following describes this process by media:

- Groundwater - The locations of all wells were a chemical concentration exceeded a PPRG were plotted on a sitewide map. Groundwater level maps were examined to ascertain groundwater flow directions. Upgradient IHSSs or groups of IHSSs were associated with each PPRG exceedance in groundwater. All known groundwater plumes were associated with the most probable source area IHSS or group of IHSSs.

- Subsurface Soils - The locations of all borings where a chemical concentration exceeded a PPRG were plotted on a sitewide map. Many of the borings were drilled to characterize known contaminant sources and so were already within an IHSS. Where a boring was not immediately within an IHSS, it was assumed that (1) the boring was drilled to characterize an adjacent IHSS or (2) the boring was associated with the construction of a monitoring well. For borings drilled to install monitoring wells, it was assumed that any PPRG exceedances were the result of chemical movement through groundwater. In these cases, PPRG exceedances were associated with upgradient IHSSs.

- Surface Soils - The spatial extent PPRG exceedances were plotted and examined to ascertain whether these exceedances could be assigned to an IHSS or area.. Any PPRG exceedances within an IHSS were assigned to that IHSS. Exceedances outside an IHSS were compared with common air dispersion patterns and assigned to the most likely IHSS.

Screening Level Risk Evaluation

All PPRG exceedances were tabulated by IHSS. The maximum ratio for each analyte per media per area, IHSS or group of IHSSs was tabulated. A risk score was calculated for each media within each site by adding maximum ratios per media, then summing groundwater, subsurface soils, and surface soils scores. All of the individual media scores, and the total score per site, were tabulated on spreadsheets. Only the highest PPRG ratio is used for each chemical in each environmental media per location. This is a conservative approach that allows sites to judged on a more uniform basis than if averages or median values were used.

Since several of the PPRG ratios are very large, using these ratios directly tends to bias the ranking results. Therefore, the total chemical scores were graded using the following table to bring the PPRG score more in line with the mobility and potential for further release scores.

Total Chemical Score	PPRG Score
>501	10
251-500	9
101-250	8
76-100	7
51-75	6
31-50	5
21-30	4
11-20	3
6-10	2
1-5	1

Mobility

This score takes into account the mobility of chemicals in the environment al well as the proximity of contamination to:

- steep slopes, as slope failure or erosion could move contaminants into drainages and potentially offsite,
- surface water which could potentially transport contaminants offsite, and
- buildings, as workers could be contaminated and spread contamination by walking through areas.

Mobility factors were assigned on a scale of 1 to 3. When the mobility factor was between two scores, the highest score was used.

1 - Contaminants that are immobile in the environment and are not close to buildings, surface water, and/or steep slopes. Unless radionuclides and metals were near buildings, near surface water, or on or near a steep slope, these were given the mobility score of one. Where engineered structures are in place that prevent the spread of contaminants, such as contamination beneath pavement, a mobility factor of one was used.

2 - Contaminants that are semi-mobile in the environment and are near surface water, or buildings. Includes semi-volatiles organics, pesticides and PCBs especially within the Industrial Area.

3 - Contaminants that are mobile in the environment and/or are close to surface water, steep slopes, and/or building received this score.

Potential for Further Release

This factor takes into account the potential for additional release of contaminants into the environment and includes cross media movement of contaminants within the environment. Sites were assigned a value of 1 to 3 based on the following criteria:

1 - Assigned to a site when contaminants were not present as free product, very high concentrations, and/or show no cross contamination of environmental media.

2 - Any sites where free product may be present in the ground and/or where there is a potential for cross contamination.

3 - Sites where there is indication or certainty that free product exists in the ground, where significant levels of contamination exist, and/or where cross contamination of environmental media is present.

Total Risk Score and Ranking

The total score for the phase I, screening level risk evaluation portion of the ER prioritization was calculated by multiplying the total PPRG score times the mobility and potential for further release factors. As a formal risk assessment is a more precise evaluation of the same data, where risk assessment data exist, they were used to rank sites. However, the scores calculated by the above methodology are shown. Where insufficient data currently exist to rank sites, these sites were roughly ranked using process knowledge and placed on the ranking above known low-risk sites. As data become available, the ranking for these sites will be updated. After the total list was ranked, the top 20 sites were evaluated for the secondary criteria.

SECONDARY CRITERIA EVALUATION

The most likely potential remediation technology was selected for the top 10 sites, in order to evaluate these for the following criteria:

- Worker safety
- Waste disposal/treatment issues
- Reduction of toxicity, mobility and/or volume
- Rough order of magnitude costs
- Rough order of magnitude project durations

  Environmental risk due to remediation activities

These criteria were used to further prioritize the top 20 sites for remediation.

The attached list is the result of the screening level risk assessment score and the secondary evaluations. (Table 4.1)

PROFESSIONAL JUDGMENT

Professional judgment was applied in the following instances:

- Where the mobility factor for a site was primarily calculated based on building proximity, and if the site was paved, the mobility factor was reduced.

- If engineered controls are currently in-place to prevent further spread of contaminants, mobility and potential for further release were set at one.

- The Solar Ponds groundwater score was calculated without using data from an upgradient well which shows the effects of an upgradient plume. This well was used to calculate the groundwater score for IHSS 118.1.

- The Old Landfill has analytical data indicating the presence of radiological anomalies at the surface. These hotspots will be dealt with under the final remedy for this site.

- Hot spots - Where analytical and process knowledge indicated that a high value was of localized extent, these values were eliminated from site evaluation, and were assigned to a localized extent list. These sites will need to be evaluated to ensure that this is the case. Most of the localized extent sites are PCB sites, including a PCB site in IHSS 150.6.

- Radium - Radium 226 and 228 analyses were not used for calculation of the PPRG ratios for this prioritization. This was done for the following reasons:

- Radium 226 and 228 are not listed for historical usage at Rocky Flats in either the Historical Release Report (DOE, 1992) or the Rocky Flats Toxicologic Review and Dose Reconstruction, Task 3/4 Report (ChemRisk, 1992).

- The decay chains and half-lifes of decay products make it highly unlikely that significant amounts of radium 226 or 228 would have accumulated by radioactive decay of radionuclides known to have used at Rocky Flats.

- The soils and groundwater in the foothills to the west of Rocky Flats are known to have high levels of both uranium (total) and radium 226.

- The background amount for radium 226 in surface soil has a PPRG ratio of 48. Therefore, any surface soil analytical result above background would skew the prioritization score to a higher result. This is not justified given the information an usage and local occurrence.

ER Risk Prioritization

Table F.1

Rank	IHSS Number and Name	Total Tank Contents	Total Ground Water	Total Subsurface Soil	Total Surface Soil	Total Chemical Score	PPRG Score	Mobility Score Multiplier	Potential for Further Release Multiplier	Total Priority Score	General Comments	Further Investigation Needed?	ROM Cost	ROM Schedule	Worker Safety Concerns	Env Risk from Waste Issues	Env Risk from Risk Reduction	Env Risk from Remediation	Potential Remediation Methodology	Phase 2 Comments
1	121/124.3 Process Waste Tank T-14	781	<1	<1	n	781	10	3	3	90		Yes	$500 K	6 months	high	yes	yes	Low	Disconnect plumbing, residue/inventory removal, RCRA closure	
2	118.1, 132 and 121 Tanks 9 & 10	523	3	442	2	970	10	3	3	90	IHSSs evaluated together	yes, define extent	$2 M	1.5 years	high	yes	yes	Low	Product recovery, followed by excavation	
3	121/124.1/124.2/125 PW Tank T-16N	375	<1	<1	n	375	9	3	3	81		Yes	$500 K	6 months	high	yes	yes	Low	Disconnect plumbing, residue/inventory removal, RCRA closure	
4	109 Ryan's Pit		25	85	<1	111	8	3	3	72	Remediation in progress		$1.4 M	5 months	moderate	yes	yes	Moderate	Excavate, thermal desorption of waste	Worker safety issues regarding PPE
5	121 Tanks T-2/T-3, 122-Underground Concrete Tanks	86	5	28	<1	119	7	3	3	63		Yes	$600 K	9 months	high	yes	yes	Low	Remove above ground tank, remove residue and abandon others	
6	112 /155/183/140 903 Pad and Lip Area		200	3	1136	1339	10	3	2	60	IHSSs evaluated together	Yes, Limited	$3.5 M	9 months	high	yes	yes	High	Excavate hot areas, cap or grade and stabilize remaining	
7	113 Mound		77	4	<1	81	7	3	2	42		Yes, limited	$1.1 M	4 months	high	none	yes	Moderate	Excavate, thermal desorption of soils prior to disposal	
8	108 Trench T-1		77	4	<1	81	7	3	2	42		Yes, limited	$2.7 M	6 months	high	yes	yes	High	Excavate, shred, thermal desoption of soil, oxidize uranium	Possibly pyrophoric uranium in trench
9	115 Trench T-4		25	2	n	27	4	3	3	36	Free product present		$2.5 M	6 months	high	yes	yes	Moderate	Excavate, treat waste	Possible liquid disposal waste issues
10	110 Trench T-3		16	10	<1	25	4	3	3	36	Large quantities of free product present		$2.5 M	6 months	high	yes	yes	Moderate	Excavate, treat waste	Possible liquid disposal waste issues
11	129 - 2 tanks outside steam plant	<1	n	n	6	6	2	3	3	18	Known contaminant plume	Yes, define extent	$5.1 M	1.5 years	moderate	none	minor	Low	Remove tanks, remove and remediate soil	cost depends on how many tanks removed
12	119.1 - OU 1- Solvent Spill Site		77	2	7	86	7	2	1	14	Uses current extraction well data only	Yes, pinpoint area	$9 M	6 months	moderate	yes	yes	Moderate	Excavate soil	
13	131 Rad Site #1 - 700 Area		14	n	4	19	3	2	2	12		Yes	n/a	n/a	no issues	none	minor/no	Low	If no subsurface contamination, probably won't require remediation	
14	189 Nitric Acid Tanks		2	n	5	7	2	3	2	12	Contamination probably ass'td with 157.2		n/a	n/a	no issues	none	minor/no	Low	Investigate futher prior to decision	Probably not the contaminant source
15	137 Bldg 712/713 Cooling Tower Blowdown		n	n	64	64	6	2	1	12	Contamination probably due to B779	Yes	$150 K	5 months	low	none	yes	Low	Hot spot soil removals	
16	174.1 (174a) PU&D Storage Areas		n	n	34	34	5	2	1	10			$500 K	6 months	low	none	minor/no	Low	Hot spot removal or cap if required	
17	101 Solar Ponds		1	<1	46	48	5	2	1	10	Upgradient groundwater from 118.1 not used		$31 M	3 years	moderate	yes	yes	Moderate	Remove liners, waste stabilization and disposal	
18	114-Present Landfill (includes IHSS 203)		4	29	<1	33	5	2	1	10	Compliance, presumptive remedy for closure		$32 M	3 years	low	none	minor	Low	Presumptive Remedy, cap, slurry wall, and leachate collection system	
19	121, 126.1, 126.2 Tank T-8	1	n	<1	<1	1	1	3	3	9		Yes	$700 K	9 months	moderate	yes	yes	Low	Leave tank, remove residue, RCRA close, remove contaminated soils	
20	121 Tank T-40	1	n	n	<1	1	1	3	3	9		Yes	$800 K	10 months	moderate	none	yes	Low	Remove tanks, treat soil	
21	176 S&W Yard		n	n	24	24	4	2	1	8			$500 K	6 months	low	none	minor	Low	Hot spot removal or cap if required	
22	120.1 North Fiberglassing area		n	n	21	21	4	2	1	8	Contamination probably from 400 Complex		$500 K	6 months	low	none	minor	Low	Hot spot removal or cap if required	
23	153 Oil Burn Pit		77	4	n	81	7	1	1	7	Remediate with Mound Site, in PA fence									
24	139.1 KOH, NaOH condensate tanks spill		n	n	19	19	3	2	1	6		Yes								
25	139.2 Hydrofluoric Acid Tank spills		n	n	19	19	3	2	1	6		Yes								
26	150.3 Rad Site Between B771 & B774		n	n	16	16	3	2	1	6										
27	214 750-Pad pondcrete/saltcrete storage		n	n	13	13	3	2	1	6										
28	157.2 Rad Site south		n	n	12	12	3	2	1	6										
29	121 Tank T-29	8	<1	<1	<1	8	2	1	2	4										
30	144 Sewer line overflow		n	n	8	8	2	2	1	4		Yes								
31	157.1 Rad Site North-Central Ave Ditch		n	n	6	6	2	2	1	4										
32	120.2 West Fiberglassing Area		n	n	6	6	2	2	1	4										
33	160 Rad Site Bldg 444 Parking Lot		2	n	16	18	3	1	1	3	Paved									
34	158 Rad Site - B551		11	n	3	14	3	1	1	3	Paved									
35	172 Central Avenue Waste Spill		n	n	18	18	3	1	1	3										
36	136.2 Cooling Tower Pond East of B444		n	n	6	6	1	2	1	2										
37	164.3 Rad Site #2 800 Area, 887 Pad		n	n	5	5	1	2	1	2										
38	163.1 Rad Site 700 North B774		n	n	4	4	1	2	1	2										
39	143 771 Outfall		1	<1	3	4	1	2	1	2										
40	127 Low level Rad waste leak		n	n	2	2	1	2	1	2										
41	186 Valve Vault 11, 12 and 13		n	n	1	1	1	2	1	2										
42	150.4 Rad Site NW of B750		n	n	1	1	1	2	1	2										
43	159 Rad Site B559		6	<1	n	6	1	1	1	1										
44	111.3 SE Trenches T-6		n	3	<1	3	1	1	1	1										
45	111.4 SE Trenches T-7		<1	3	<1	3	1	1	1	1										
46	111.5 SE Trenches T-8		<1	3	<1	3	1	1	1	1										
47	111.6 SE Trenches T-9		<1	3	<1	3	1	1	1	1										
48	138 Bldg 779 Cooling Tower Blowdown		n	n	2	2	1	1	1	1		Yes								
49	164.2 Rad Site #2, 800 Area, Bldg 886 Spill		2	<1	<1	2	1	1	1	1										
50	111.7 SE Trenches T-10		n	tbd	tbd	0														
INV	121 Old Process Waste Lines-includes:										Investigation done, analysis not, free product?								IHSS 121 includes the following italicized IHSSs	
INV	66 segments (35,000') & 22 tank units-not investigated	n	n	n	n						Not characterized, probably highly contaminated									
INV	123.2 Valve Vault w. of 707	n	n	n	n						Not characterized, probably highly contaminated									
INV	146.1 Process Waste Tank #31	n	n	n	n						Tank removed								Yes	
INV	146.2 Process Waste Tank #32	n	n	n	n						Tank removed								Yes	
INV	146.3 Process Waste Tank #34W	n	n	n	n						Tank removed								Yes	
INV	146.4 Process Waste Tank #34E	n	n	n	n						Tank removed								Yes	
INV	146.5 Process Waste Tank #30	n	n	n	n						Tank removed								Yes	
INV	146.6 Process Waste Tank #33	n	n	n	n						Tank removed								Yes	
INV	147.1 MAAS Area	n	n	n	n						Not characterized, probably highly contaminated									
INV	149.1 OPWL to SEPS	n	n	n	n						Not characterized, probably highly contaminated									
INV	149.2 OPWL to SEPS	n	n	n	n						Not characterized, probably highly contaminated									
INV	215 Abandoned sump near 774	n	n	n	n						Not characterized, probably highly contaminated									
INV	128 Oil Burn Pit #1		<1	n	<1						Tied to Building 335 D&D Project								Yes	
INV	171 Fire Training		n	n	<1						Tied to Building 335 D&D Project								Yes	
INV	123.1 Valve Vault #7		n	n	<1														Yes	
INV	135 Bldg 335 Cooling Tower		n	n	<1														Yes	
INV	150.1 Rad Site N. of 771		n	n	<1														Yes	
INV	150.2 Rad Site W. of 771/776		n	n	<1						Rad Screens only								Yes	
INV	150.7 Rad Site S. of 779		n	n	<1						Rad Screens only								Yes	
INV	150.8 Rad Site S. of 776		n	n	<1														Yes	
INV	151 Fuel Oil Leak		n	n	<1														Yes	
INV	163.2 Americium Slab		n	n	<1						HPGe Survey								Yes	
INV	173 Rad Site Bldg 991		n	n	<1														Yes	
INV	184 Rad Site 991 Steam		n	n	<1														Yes	
INV	170 PU & D Storage Yard		n	n	<1														Yes	
INV	174.2 (174b) PU & D Storage Yard; Dumpster		n	n	<1														Yes	
INV	210 Bldg 980 Cargo Container		n	n	<1														Yes	
INV	213 904 Pad; Pondcrete Storage		n	n							Active Storage Unit, not sampled								Yes	
INV	116.1 Bldg 447, W. Loading Dock		n	n	<1														Yes	
INV	116.2 Bldg 444, S. Loading Dock		n	n	<1														Yes	
INV	136.1 Cooling Tower Pond W. of 444		n	n	<1														Yes	
INV	117.1 North Site/Scrap Metal		n	n	<1														Yes	
INV	117.2 Middle Site Chemical Storage		n	n	<1														Yes	
INV	148 Waste Leaks		n	n	<1														Yes	
INV	152 Fuel Oil Tank 221 Spills		n	n	<1														Yes	
INV	197 Scrap Metal Storage		n	n	<1														Yes	
INV	161 Rad Site #2 - W. of 664		n	n	<1														Yes	
INV	162 Rad Site #2 - 709 Area		n	n	<1														Yes	
INV	164.1 Rad Site #2 - 800 Area		n	n	<1														Yes	
INV	154 Pallet Burn Site		n	n	<1						Removed during PA construction, verify only									
Low	177-OU 10		<1	n	<1						Does not meet PPRGs									
Low	118.2 Solvent Spills North End of Bldg. 707		n	n	<1						Evaluate using approved NA/NFA process	Yes								
Low	188 Acid Leak Southeast of Bldg. 374		n	n	<1						Evaluate using approved NA/NFA process									
Low	121-PO8 OPWL Pipeline; 135 ft; Bldg. 881		n	n	n						Evaluate using approved NA/NFA process	Yes								
Low	121-P57 OPWL Pipeline; 112 ft; Bldg. 122		n	n	n						Evaluate using approved NA/NFA process	Yes								
Low	121-T12 Invalid tank location		n	n	n						Evaluate using approved NA/NFA process									
Low	121-T31 Invalid tank location		n	n	n						Evaluate using approved NA/NFA process									
Low	121-T33 Invalid tank location		n	n	n						Evaluate using approved NA/NFA process									
Low	121-T34 Invalid tank location		n	n	n						Evaluate using approved NA/NFA process									
Low	121-T35 Invalid tank location		n	n	n						Evaluate using approved NA/NFA process									
Low	175 S&W B.980 Container Storage Facility		n	n	<1						Evaluate using approved NA/NFA process									
Low	181 Building 334 Cargo Container Area		n	n	<1						Evaluate using approved NA/NFA process									
Low	182 444/453 Drum Storage Area		n	n	<1						Evaluate using approved NA/NFA process									
Low	205 Sump #3 Acid Site, SE B460		n	n	<1						Evaluate using approved NA/NFA process									
Low	206 Inactive D-386 HW Tank B374		n	n	<1						Evaluate using approved NA/NFA process									
Low	207 Inactive B444 Acid Dumpsters		n	n	<1						Evaluate using approved NA/NFA process									
Low	208 Inactive 444/447 Waste Stor.		n	n	<1						Evaluate using approved NA/NFA process									
Low	147.2 Bldg 881 Conversion Activity		n	n	<1						Evaluate using approved NA/NFA process									
Low	187 Sulfuric Acid Spill; B443		n	n	n						Evaluate using approved NA/NFA process									
Low	117.3 S Chemical Storage Site		n	n	<1						Evaluate using approved NA/NFA process									
Low	169 Hydrogen Peroxide Spill		n	n	n						Evaluate using approved NA/NFA process									
Low	190 Caustic Leak		n	n	<1						Evaluate using approved NA/NFA process									
Low	191 Hydrogen Peroxide Leak		n	n	n						Evaluate using approved NA/NFA process									
Low	154(N) Lithium Metal Destruction Site		<1	<1	<1						Evaluate by NA/NFA process/tie B335 D&D									
Low	134(S) Lithium Metal Destruction Site		n	n	<1						Evaluate by NA/NFA process/tie B335 D&D									
Low	156.1 Radioactive Site		n	n	<1						Evaluate using approved NA/NFA process									
Low	156.6 Loading Dock		n	n	<1						Evaluate with NA/NFA/PCB Hot Spot only									
Low	115 Original Landfill										HHRA, 10E-4 to 10-6 Remedial Action r due to physical hazard									
Low	196 in Old Landfill		<1	<1	<1						HHRA, 10E-4 to 10-6									
Low	133.1 Ash Pit #1		<1	<1	<1						HHRA, 10E-4 to 10-6									
Low	133.2 Ash Pit #2		<1	<1	<1						HHRA, 10E-4 to 10-6									
Low	133.3 Ash Pit #3		<1	<1	<1						HHRA, 10E-4 to 10-6									
Low	133.4 Ash Pit #4		<1	<1	<1						HHRA, 10E-4 to 10-6									
Low	133.5 Incinerator		n	<1	<1						HHRA, 10E-4 to 10-6									
Low	133.6 Concrete Wash Pad		n	<1	<1						HHRA, 10E-4 to 10-6									
Low	142.1 Pond A-1		n	<1	<1						HHRA, 10E-4 to 10-6 w/pond data									
Low	142.2 Pond A-2		n	<1	<1						HHRA, 10E-4 to 10-6 w/pond data									
Low	142.3 Pond A-3		n	<1	<1						HHRA, 10E-4 to 10-6 w/pond data									
Low	142.5 Pond B-1		n	<1	<1						HHRA, 10E-4 to 10-6 w/pond & sed data									
Low	142.6 Pond B-2		n	<1	<1						HHRA, 10E-4 to 10-6 w/pond & sed data									
Low	142.7 Pond B-3		n	<1	<1						HHRA, 10E-4 to 10-6 w/pond & sed data									
Low	142.8 Pond B-4		n	<1	<1						HHRA, 10E-4 to 10-6 w/pond & sed data									
Low	199 Offsite Land Surface		n	<1	<1						HHRA, 10E-4 to 10-6 No groundwater issues									
Low	200 Great Western Reservoir		<1	<1	<1						HHRA, 10E-4 to 10-6, plus sediment samples									
Low	167.2 Landfill Pond Spray Area		n	<1	<1						HHRA, 10E-4 to 10-6									
Low	167.3 Landfill South Spray Area		n	n	<1						Focused HHRA, 10E-4 to 10-6									
Low	111.2 Trench T-5		<1	<1	<1						Does not exceed PPRG ratio of 1									
Low	111.8 Trench T-11		n	<1	<1						Does not exceed PPRG ratio of 1									
Low	216.2 East Spray Field - OU 2		n*	n	<1						PPRG ratio less than 1, *2 downgrdnt wells									
Low	216.3 East Spray Field - OU 2		n*	n	<1	0	1	1	1	1	PPRG ratio less than 1, *2 downgrdnt wells									
Low	102 Oil Sludge Pit		11	50	2	63	6	2	1	12	HHRA, less than 10-6									
Low	103 Chemical Burial		11	50	2	63	6	2	1	12	HHRA, less than 10-6									
Low	104 Liquid Dumping		11	50	2	63	6	2	1	12	HHRA, less than 10-6									
Low	105.1 W Out-of-Service Fuel Tank		11	50	2	63	6	2	1	12	HHRA, less than 10-6									
Low	105.2 E Out-of-Service Fuel Tank		11	50	2	63	6	2	1	12	HHRA, less than 10-6									
Low	106 Outfall		11	50	2	63	6	2	1	12	HHRA, less than 10-6									
Low	107 Hillside Oil Leak		11	50	2	63	6	2	1	12	HHRA, less than 10-6									
Low	119.2 Solvent Spill Site		11	50	2	63	6	2	1	12	HHRA, less than 10-6									
Low	130 800 Area Rad Site #1		11	50	2	63	6	2	1	12	HHRA, less than 10-6									
Low	145 Sanitary Waste Line Leak		11	50	2	63	6	2	1	12	HHRA, less than 10-6									
Low	142.10 Pond C-1		n	<1	<1						HHRA, less than 10-6 Includes pond & seds									
Low	142.11 Pond C-2		n	<1	<1						HHRA, less than 10-6 Includes pond & seds									
Low	167.1 N Landfill Spray Area		<1	2	<1	2	1	1	1	1	HHRA, less than 10-6									
Low	165 Triangle Area		<1	<1	15	15	3	2	1	6	HHRA, less than 10-6									
Low	141 Sludge Dispersal Area		<1	n	1	1	1	2	1	2	HHRA, less than 10-6									
Low	156.2 Soil Disposal Area		<1	<1	<1						HHRA, less than 10-6									
Low	Buffer Zone Pu plume area OU 2		na	na	<1						HHRA, less than 10-6 surface soil issue only									
Low	201 Standley Lake		<1	<1	<1						Passed CDPHE screen									
Low	202 Mower Reservoir		<1	<1	<1						Passed CDPHE screen									
Low	209 Surface Disturbances		<1	<1	<1						Passed CDPHE screen									
Low	166.1 Landfill Trench A		2	<1	n	2	1	1	1	1	Passed CDPHE screen									
Low	166.2 Landfill Trench B		<1	<1	n						Passed CDPHE screen									
Low	166.3 Landfill Trench C		<1	<1	n						Passed CDPHE screen									
Low	F167.3 Former S. Spray Field		<1	<1	<1						Passed CDPHE screen									
Low	142.4 Pond A-4		<1	<1	<1						Passed CDPHE screen w/ pond and sed data									
Low	142.9 Pond B-5		<1	<1	<1						Passed CDPHE screen w/ pond and sed data									
Low	142.12 Walnut and Indiana Pond		<1	<1	<1						Passed CDPHE screen									
Low	216.1 East Spray Field - OU 6		n	3	<1	0	1	1	1	1	Passed CDPHE screen									
Low	168 West Spray Field		<1	<1	<1						Passed CDPHE screen									
Low	179 B865 Drum Storage, Rm. 145										RCRA Clean Closure CAD/ROD in Progress									
Low	180 B883 Drum Storage, Rm. 104										RCRA Clean Closure CAD/ROD in Progress									
Low	204 Original Uranium Chip Roaster										RCRA Clean Closure CAD/ROD in Progress									
Low	178 B881 Drum Storage, Rm. 165										No source found-CAD/ROD in progress									
Low	211 B881 Drum Storage #26-R211										No source found-CAD/ROD in progress									
Low	217 B881 Cyanide Treatment - #32										No source found-CAD/ROD in progress									

n = data not available

DRAFT

HOTSPOT RISK PRIORITIZATION
CHEMICAL SCORE RANKING

	IHSS/LOCATION	RISK PRIORITIZATION SCORE	COMMENTS
1	IHSS 150.6	1,858	High score due to PCBs in surface soil
2	PCB 443	1,157	
3	PCB 23	511	
4	PCB 17	439	
5	PCB 26	431	
6	PCB 9	181	
7	PCB 12	169	
8	PCB 2	167	
9	PCB 20	70	
10	PCB 22	40	
11	PCB 15	31	
12	PCB 31	23	
13	PCB 7	20	
14	PCB 18	15	
15	PCB 14	12	
16	PCB 13	11	
17	PCB 11	11	
18	PCB 16	6	
19	PCB 5	5	
SC	SPECIAL CASE IHSS 115 (OLD LANDFILL)	26,524	Three samples show high results, probably due to small quantities of metal bits. These will be remediated during the final action.

DELETED OR REMOVED IHSSs

OU	IHSS	REASON							
OU9	150.5 Rad Site W. of 707	Deleted from IAG/OU 9							
OU16	193 Steam Condensate Leak	Closed through OU 16 ROD	1.08	1.08	1	2	1	2

APPENDIX G

GLOSSARY